PACIFIC SALMON COMMISSION
JOINT CHINOOK
TECHNICAL COMMITTEE REPORT

2009 ANNUAL REPORT OF
CATCHES AND ESCAPEMENTS

REPORT TCCHINOOK (09)-1

June 26, 2009

Membership of the Chinook Technical Committee

Canadian Members

Mr. Chuck Parken, Co-Chair, CDFO
Dr. Rick McNicol, CDFO
Mr. Richard Bailey, CDFO
Dr. Gayle Brown, CDFO
Mr. Roger Dunlop, FNC
Ms. Dawn Lewis, CDFO
Ms. Teresa Ryan, FNC
Mr. Julian Sturhahn, CDFO
Dr. Arlene Tompkins, CDFO
Mr. Ivan Winther, CDFO
Mr. Howie Wright, FNC

United States Members

Dr. Rishi Sharma, Co-Chair, CRITFC
Mr. John Carlile, Co-Chair, ADF&G
Dr. Dave Bernard, ADF&G
Mr. Ryan Briscoe, ADF&G
Mr. Ethan Clemons, ODFW
Dr. John H. Clark, ADF&G
Mr. Gary Freitag, UAF
Mr. Ed Jones, ADF&G
Dr. Robert Kope, NMFS
Mr. Brian Lynch, ADF&G
Ms. Marianne McClure, CRITFC
Mr. Scott McPherson, ADF&G
Dr. Gary Morishima, QIN
Mr. James Packer, WDFW
Dr. Ken Warheit, WDFW
Mr. Alex Wertheimer, NMFS
Mr. Henry Yuen, USFWS
Dr. Marianna Alexandersdottir, NWIFC
Dr. Yong-Woo Lee, WDFW
Mr. William Templin, ADF&G

LIST OF ACRONYMS WITH DEFINITIONS

AABM	Aggregate Abundance Based Management
AC	Allowable Catch
AI	Abundance Index
ADF&G	Alaska Department of Fish & Game
AEQ	Adult Equivalent
Agreement	June 30, 1999 PST Annex and the related Agreement
AUC	Area Under the Curve
AWG	Analytical Working Group of the CTC
BCAFC	British Columbia Aboriginal Fisheries Commission
BTR	Base Terminal Run
C&S	Ceremonial & Subsistence
CBC	Central British Columbia Fishing area – Kitimat to Cape Caution
CCMP	Comprehensive Chinook Management Plan
CDFO	Canadian Department of Fisheries & Oceans
CI	Confidence Interval
CNR	Chinook Non-retention
CR	Columbia River
CRITFC	Columbia River Intertribal Fish Commission
CRFMP	Columbia River Fishery Management Plan
CTC	Chinook Technical Committee
CUS	Columbia Upriver Spring Chinook stock
CWT	Coded Wire Tag
DIT	Double Index Tag
ESA	U S Endangered Species Act
Est+fw	Estuary Plus Fresh Water Area
FL	Fork Length
FMP	PFMC Framework Management Plan
FNC	First Nations Caucus
FOG	Fisheries Operational Guidelines
FR	Fraser River
GCG	Gene Conservation Group
GW	Gitwinksihlkw
GS	Strait of Georgia
HOR	Hatchery Origin Returns
IDFG	Idaho Department of Fish & Game
IDL	InterDam Loss
IM	Incidental Mortality
ISBM	Individual stock based management
LFR	Lower Fraser River
LGS	Lower Strait of Georgia
mar	Marine Area
mar+fw	Marine Plus Fresh Water Area
MOC	Mid Oregon Coast
MRP	Mark-Recovery Program
MSF	Mark-Selective Fishery
MSH	Maximum sustainable harvest
MSY	Maximum Sustainable Yield for a stock, in adult equivalents
MSY ER	Exploitation Rate sustainable at the escapement goal for a stock, in AEQs
NBC	Northern British Columbia Dixon Entrance to Kitimat including Queen Charlotte Islands
NA	Not Available
NBC	Northern British Columbia Dixon Entrance to Kitimat including Queen Charlotte Islands
NM	Nautical Mile
NMFS	National Marine Fisheries Service
NOC	Oregon Coastal North Migrating Stocks
NPS	North Puget Sound
NPS-S/F	North Puget Sound Summer/Fall Chinook stock
NR	Not Representative
NWIFC	Northwest Indian Fisheries Commission
ODFW	Oregon Department of Fish & Wildlife
PFMC	Pacific Fisheries Management Council
PS	Puget Sound
PSC	Pacific Salmon Commission
PSARC	Pacific Scientific Advice Review Committee
PSMFC	Pacific States Marine Fisheries Commission
PST	Pacific Salmon Treaty
QDNR	Quinault Department of Natural Resources, Division of fisheries
QIN	Quinault Nation
QCI	Queen Charlotte Islands
RER	Recovery Exploitation Rate
S_{MSY}	Escapement producing MSY
SEAK	Southeast Alaska Cape Suckling to Dixon Entrance
SG	Strait of Georgia
SPS	South Puget Sound
SWVI	Southwest Vancouver Island
TAC	Technical Advisory Committee
TBR	Transboundary Rivers
TTC	Transboundary Technical Committee
UAF	University of Alaska Fairbanks
UFR	Upper Fraser River
UGS	Upper Strait of Georgia
USCTC	U S members of the CTC
USFWS	U S Fish & Wildlife Service
UW	University of Washington
WA/OR	Ocean areas off Washington and Oregon North of Cape Falcon
WAC	Washington Coast (Grays Harbor northward)
WACO	Washington, Oregon, Columbia River Chinook stock group
WCVI	West Coast Vancouver Island excluding Area 20
WDFW	Washington Department of Fisheries and Wildlife

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

The June 30, 1999, Pacific Salmon Treaty (PST) Annexes and Related Agreements (Agreement) substantially changed the objectives and structure of the Pacific Salmon Commission's (PSC) Chinook salmon fisheries and assessment of Chinook salmon stocks. The Agreement replaced the previous ceiling and pass-through fisheries with Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries. It also assigned the Chinook Technical Committee (CTC) with a number of tasks related to implementation of the Agreement (Appendix to Annex IV, Chapter 3).

This report summarizes the 2008 fishery catches by region, available estimates of incidental mortality by fishery and limited commentary on fishery catches where needed. Landed catch is reported in the appendices for each geographic area covered under the PST. An assessment of escapement for stocks with CTC accepted goals is included, and escapement data thru 2008 are provided for all escapement indicator stocks.

The escapements of 50 naturally spawning escapement indicator stocks/stock aggregates are reviewed annually. Biologically-based escapement goals have been accepted by the CTC for 24 of the 50 escapement indicator stocks/stock aggregates. For 12 of these, the agency escapement goal is defined as a range; for the remaining 12, the escapement goal is the point estimate of S_{MSY} (escapement producing maximum sustained yield). In 2008, escapements were within the goal range for seven stocks, above the range or S_{MSY} point estimate for six stocks, and below the goal for eleven stocks. Data for stocks without accepted goals are presented to illustrate trends in escapement. The CTC will continue to review escapement goals, as they are provided to the committee.

1 CHINOOK CATCH

The June 30, 1999, Pacific Salmon Treaty (PST) Annexes and Related Agreements (Agreement) substantially changed the objectives and structure of the Pacific Salmon Commission's (PSC) Chinook salmon fisheries. The Agreement eliminated the previous ceiling and pass-through fisheries and replaced them with Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries. Chinook catches for the AABM fisheries in 2006 are summarized in Tables 1.1-1.4. Historical catches for PSC Chinook fisheries are given in Appendices A.1-A.14.

Starting with the report CTC (2004a), the Chinook Technical Committee included estimates of incidental mortalities associated with landed catch for each component of each AABM fishery and most ISBM fisheries (CTC 2004b). Limited commentary on both AABM and ISBM fisheries is also provided.

1.1 REVIEW OF AABM FISHERIES

AABM fisheries for Chinook are managed to achieve a target catch corresponding to a target harvest rate index and each year's abundance index (AI) in Table 1 of the Agreement. AABM fisheries are mixed stock salmon fisheries that intercept and harvest migratory Chinook from many stocks. The AABM fisheries (Annex IV, Chapter 3, paragraph 2) are:

1) Southeast Alaska (SEAK) All Gear,
2) Northern BC (NBC) Troll and Queen Charlotte Islands (QCI) sport, and
3) West Coast Vancouver Island (WCVI) Troll and Outside Sport.

Catches for these three fisheries are reported in Table 1.1.

Table 1.1. Annual catches and hatchery add-ons for the AABM fisheries, in thousands of Chinook salmon. The Treaty catches do not include the add-on or exclusions (see Section 1.1.1 and Appendix A.1). Notation is T for Troll, N for Net and S for sport.

	SEAK (T, N, S)			NBC (T), QCI (S)		WCVI (T, S)	
	Treaty Catch		Hatchery	Treaty Catch		Treaty Catch	
Year	Limit[1]	Observed	Add-on	Limit[1]	Observed	Limit[1]	Observed
1999	184.2	198.8	47.7	126.1	86.7	107.0	36.4
2000	178.5	186.5	74.3	123.5	31.9	86.2	101.4
2001	250.3	186.9	77.3	158.9	43.5	145.5	117.7
2002	371.9	357.1	68.2	237.8	150.1	196.8	165.0
2003	439.6	379.5	57.5	277.2	191.7	268.9	175.8
2004	418.3	417.0/421.7[2]	76.0	267.0	241.5	209.6	216.6
2005	387.4	390.5	65.8	240.7	243.6	179.7	202.7
2006	354.5	357.7	49.4	200.0	216.0	145.5	146.9
2007	329.4	326.6	70.2	143.0	144.2	121.9	139.2
2008	152.9	163.7	65.5	120.9	95.6	136.9	143.8
2009[3]	218.8			143.0		107.8	

[1] Allowable treaty catches correspond to the postseason AIs for 1999-2008 and the preseason AI for 2009.
[2] The value on the left excludes District 108 Stikine catch above base levels. The value on the right includes it.
[3] 2009 agreement

1.1.1 Southeast Alaska Fisheries

The SEAK Chinook fishery has been managed to achieve the annual all gear PSC allowable catch through a plan established by the Alaska Board of Fisheries. Once the all gear allowable catch is determined from the preseason AI each spring, this plan establishes gear quotas for the troll, net, and sport fisheries. The allocation plan reserves 4.3% of the total PSC catch for purse seine, 2.9% for drift gillnet and 1,000 fish for combined set gillnet fisheries. After the net quotas are subtracted, 80% of the remainder is reserved for troll gear and 20% for the sport fishery. The sport fishery is managed in-season with bag-limits and other constraints. Regulatory history and maps for each SEAK fishery are detailed in CTC (2004b).

In addition, the SEAK fisheries were managed for:

1) An Alaskan hatchery add-on estimated from CWT sampling. The add-on is the total estimated Alaskan hatchery harvest, minus 5,000 base-period Alaskan hatchery harvest, and minus one-half of the 90% confidence interval for the total Alaskan hatchery harvest.

2) An exclusion of Situk stock catch and exclusions of wild Chinook originating from the Stikine River.
3) Compliance with provisions established by the National Marine Fisheries Service in accordance with the U.S. Endangered Species Act (ESA).
4) Consistency with the provisions of the PST as required by the Salmon Fishery Management Plan of the North Pacific Fishery Management Council that was established by the U.S. Magnuson-Stevens Act.

The total harvest in SEAK in 2008 was lower than harvests from 2002 to 2007. The pre-season AI of 1.07 allowed an initial all-gear catch of 170,000 fish per the Agreement. The all gear harvest was 236,446, comprised of a treaty catch of 163,685, an add-on of 65,536, and excluded catch of 7,226 Chinook salmon. A breakdown by gear for total catch, Alaskan hatchery contributions and terminal exclusions is detailed in Table 1.2. Historical harvests for 1975-2008 for SEAK are in Appendix A.1.

Troll fishery regulations in 2008 were similar to those in 2007. The accounting year began with the start of the winter fishery on October 11, 2007and ended the following September, 2008. The winter fishery continues until 45,000 Chinook salmon are caught or through April 30, whichever is earlier. In 2008, the harvest in the winter fishery was greater than 45,000 and the winter troll fishery was closed on April 12. The spring fisheries were managed so that each fishery would not exceed a predetermined number of non-Alaskan Chinook salmon based on the Alaskan hatchery percentage in each of the small fisheries. Also, in 2008, the first summer fishery opening began on July 1 and was managed to harvest 70% of the remaining troll gear Chinook quota based on the pre-season AI. After the first 70% of the summer quota was harvested, the areas of high Chinook salmon abundance were closed while the fishery was directed primarily onto coho (in recent years, a large portion of the troll fleet has also targeted on chums). In 2008, no in-season adjustment of the AI was made because the results using the methodology established by the CTC and used since 1997 were poorly correlated with the first post-season calibration. A second summer Chinook salmon retention period began after necessary management actions for coho salmon were determined.

In 2008, the troll fishery harvested 151,926 Chinook salmon, including 28,850 Alaskan hatchery fish, of which 125,584 were treaty fish (Table 1.2). The winter fishery harvested 21,824 of which 2,854 (13.1%) were from Alaskan hatcheries, with a total of 19,378 treaty fish. The spring fishery harvested a total of 41,132 of which 22,105 (53.7%) were Alaskan hatchery fish and 20,570 were treaty fish.

The total summer harvest was 88,970 of which 3,891 were from Alaskan hatcheries. The areas of high Chinook salmon abundance were closed for the remainder of the summer season after July 31 although there was no region-wide Chinook salmon closure following the harvest of the initial 70% of the summer quota. The remaining 30% of the summer quota was harvested from August 1 through August 8.

1.1.1.1 Net Fisheries Harvest

Net harvest of Chinook salmon in the purse seine fishery is limited with a 28" (71 cm) minimum size limit and the use of Chinook salmon non-retention (CNR) regulations. Chinook salmon

between 21" and 28" may never be sold, while Chinook salmon below 21" may be retained at all times. Gillnet harvest of Chinook salmon is limited by a delayed season opening in late June unless directed fisheries are implemented for stocks of Chinook salmon bound for the Taku and Stikine Rivers. Directed fisheries were in place in 2008 for Stikine River Chinook salmon, but did not occur for Taku River Chinook salmon in 2008.

The 2008 total net harvest was 46,149 Chinook salmon (Table 1.2). There was a total of 5,847 fish excluded and 29,918 Chinook salmon were from Alaskan hatcheries. The total net harvest minus the claimed terminal exclusion and the allowed Alaskan hatchery add-on was 12,439 Chinook salmon. The treaty harvest by gear type was 844 for set gillnet, 8,198 for drift gillnet and 3,397 for purse seine.

1.1.1.2 Recreational Fishery Harvest

Recreational harvests are monitored in-season by creel surveys throughout the region, and sampling programs are in place to recover coded-wire tagged Chinook salmon and coho salmon. In 2008, regulations for the recreational fishery started with a one fish daily bag limit for all anglers. Non-resident anglers started the season with a three fish annual limit. Later in the season, the non-resident annual limit stepped down from three fish to two fish beginning July 1, and then to one fish 48" or greater from July 16 to September 30. The minimum size limit of 28" in total length was in effect for both resident and non-resident anglers with the exception of the 48" regulation for non-resident anglers. In "terminal" areas near hatchery release sites, however, bag and size limit regulations were liberalized to provide for increased harvests of returning Alaskan hatchery Chinook salmon. The total preliminary harvest in 2008 was 38,371 Chinook salmon, 10,454 Chinook salmon were Alaskan hatchery fish taken in mixed stock fisheries, and another 3,750 Alaskan hatchery fish were taken in terminal hatchery areas (Table 1.2). The preliminary total sport harvest of 38,371, minus 12,709 combined allowed hatchery add-on and wild terminal exclusion fish, resulted in a treaty harvest of 25,662 Chinook salmon. Preliminary harvests for 2008 will be updated after mail survey results are obtained in the summer of 2009.

Table 1.2. Harvest of Chinook salmon in SEAK by gear type in 2008.

Gear	Total Harvest	Alaskan Hatchery Harvest	Alaskan Hatchery Add-on	Catch Exclusion[1]	Treaty Catch
Troll					
Winter	21,824	2,854	2,446	0	19,378
Spring	41,132	22,105	19,183	1,378	20,570
Summer	88,970	3,891	3,335	0	85,635
Troll subtotal	151,926	28,850	24,964	1,378	125,584
Sport	38,371	14,204	12,709	0	25,662
Net					
Set Net	844	0	0	0	844
Driftnet	29,765	17,714	15,720	5,847	8,198
Seine	15,540	12,204	12,143	0	3,397
Net subtotal	46,149	29,918	27,863	5,847	12,439
Total	236,446	72,972	65,536	7,226	163,685

[1] Exclusion catch claimed in 2008 is for the harvest sharing arrangement on the Stikine River in District 108, there was no directed fishery on the Taku River in District 111 in 2008. There was no catch exclusion claimed on the Situk in 2008 as the catch did not reach the base level.

1.1.2 British Columbia Fisheries

Under the 1999 PST Agreement, the AABM fishery was defined to include NBC troll catch in statistical areas 1-5 and QCI sport catch in statistical areas 1 and 2. The total AABM catch in 2008 was 95,647. The WCVI AABM fishery includes the WCVI troll and the outside WCVI Chinook sport fishery (defined below). The total AABM landed catch in 2008 was 145,726 (Table 1.3).

1.1.2.1 NBC Troll Fishery Harvest

The NBC troll fishery landed 52,147 Chinook salmon in 2008. The North Coast B.C. troll fishery was opened for Chinook fishing from June 20 to August 8 and from August 28 to September 30, 2008. The entire 2008 NBC Troll fishery was conducted under a system of individual transferable quotas. A total of 283 vessels were licensed for the NBC Troll fishery. All licences were activated but the harvest was conducted by a total of 136 vessels as much of the quota was transferred. Barbless hooks and revival boxes were mandatory in the troll fishery and the minimum size limit was 67 cm. No troll test fisheries were conducted in the North Coast of B.C. in 2008. A ribbon boundary around Langara Island and from Skonun Point to Cape Knox on Graham Island excluded the commercial troll fishery from areas within one nautical mile of the shore for the full duration of the Chinook fishery.

Table 1.3. Summary of landed catch by gear for Canadian AABM fisheries in 2008.

AABM Fishery	Troll	Sport	Total
NBC	52,147	43,500	95,647
WCVI	95,170	50,556	145,726

1.1.2.2 NBC and CBC Sport Fishery Harvest

Tidal recreational fisheries in NBC and CBC (marine statistical Areas 1-11) are managed under one set of regulations (45 cm minimum size limit; two Chinook per day and four in possession; annual bag limit of 30). During the past decade, recreational fisheries in the marine areas of NBC and CBC have expanded substantially. Management of these marine recreational fisheries now recognizes two regions: QCI, and the coastal mainland. Only the QCI recreational catch is included in the AABM totals. Since 1995, catches in the QCI recreational fisheries have been estimated by creel surveys, lodge logbook programs and independent observations by CDFO staff. Catch for this fishery in 2008 was 43,500 Chinook salmon. Thus, the total NBC AABM catch (troll plus sport) between October 1, 2007 and September 30, 2008 was 95,647 Chinook salmon (Table 1.3).

1.1.2.3 West Coast Vancouver Island AABM

Under the 1999 PST Agreement, the WCVI AABM fishery includes the WCVI troll and the outside WCVI sport fishery (defined below). The total AABM landed catch (First Nations, troll, and outside tidal sport) in 2008 was 145,726 Chinook (Table 1.3).

1.1.2.3.1 WCVI Troll Fishery Harvest

The AABM troll catch includes the commercial and First Nations troll caught Chinook salmon in Statistical Areas 21, 23-27, and 121-127. In the 2008 season (October 1, 2007-September 30, 2008), the WCVI troll fishing opportunities were consistent with a CDFO commitment to evaluate winter fisheries as a means to improve the economic base for the fleet and local communities while increasing flexibility in harvest opportunities and reducing the harvest rates on stocks encountered in summer fisheries (Table 1.4). Troll fishery openings were shaped by conservation concerns for early spring-run Fraser River, WCVI and Lower Strait of Georgia (LGS) Chinook and upper Fraser River and Thompson River coho.

To reduce impacts on early spring-run Fraser and LGS Chinook, SWVI areas 123-124 were closed from mid-March to mid-April. To reduce impacts on Upper Fraser and Thomson River coho, coho non-retention remained in effect for the spring/summer period, coho encounter rates were monitored, and commercial fisheries were closed from late June until late July. To reduce impacts on WCVI Chinook, summer fisheries were limited to 10,000 Chinook, and the July to September fisheries were conducted 5 nautical miles seaward of the surfline. To reduce impacts on LGS Chinook, harvest levels were reduced during the spring period when recent impacts were highest (by reducing the TAC by 20%): the April catch was reduced from 57,063 in 2005 and 20,561 in 2006, 5,223 in 2007, and to 1,723 in 2008. May catch was reduced from 26,655 in 2005 to 7,078 in 2006, but increased to 23,464 in 2007, then to down 10,424 in 2008. This measure also provides some benefits to spring run US Chinook stocks when the mature run is abundant on the WCVI. Statistical Area 121 (the southern bank area) remained closed in 2008. Selective fishing practices were mandatory, including single barbless hooks and "revival tanks"

for resuscitating coho salmon prior to release. Size limits for commercial troll remained unchanged in most periods of 2007/2008 at 55 cm (fork length), and the size limit for the September fishery was 62 cm (fork length). The majority of catch from November through March came from Area 126. The majority of the catch in September came from Area 123.

The catches for 2008 commercial troll fisheries between October 1, 2007 and September 30, 2008 were 90,170 Chinook (Table 1.4). WCVI First Nations caught an estimated 5,000 Chinook salmon in 2008. Therefore, the total WCVI AABM troll catch for 2008 was 95,170 with 65 legal and 7,233 sublegal Chinook releases (not including releases from the WCVI First Nations troll fisheries, which are currently unknown).

Table 1.4. Fishing periods and Chinook harvested and released during the 2008 accounting year in the WCVI commercial troll fishery.

Fishing Period	Areas Open	Area Predominately Fished	Landed Catch	Legal Release	Sub-legal releases
Oct 17-27, 2007	Areas 123, 124, 125, 126, 127	123	3137	2	1462
Jan 15-31, 2008	Areas 23, 24, 25, 26, 27, 123, 124, 125, 126, 127	126	1634	5	245
Feb 1-29, 2008	Areas 23, 24, 25, 26, 27, 123, 124, 125, 126, 127	126	1949	11	267
Apr 20-May 1, 2008	Areas 23, 24, 25, 26, 27, 125, 126, 127	126	1753	0	41
May 2-6, 2008	Areas 23, 24, 25, 26, 27, 124, 125, 126, 127	124/126	506	0	15
May 7-30, 2008	Areas 23, 24, 25, 26, 27, 123, 124, 125, 126, 127	123	9918	0	116
May 31-Jun 15, 2008	Areas 23, 24, 25, 26, 27, 123, 124, 125, 126, 127	123	17017	4	373
Aug 2-4, 2008	Areas 123, 124, 125, 126, 127	123	9099	0	174
Sep 2-9, 2008	Areas 123, 124, 125, 126, 127	123	35230	43	3112
Sep 10-14, 2008	Areas 125, 126, 127	125	1076	0	96
Sep 22-27, 2008	Areas 123, 124, 125, 126, 127	123	8795	0	1332
Sep 28, 2008	Areas 125, 126, 127	126	56	0	0
TOTAL			**90,170**	**65**	**7,233**

Note: WCVI troll fisheries were generally closed from mid June to late August to avoid encounters of Upper Fraser and Thompson River coho and WCVI Chinook.

1.1.2.3.2 WCVI Recreational Fishery Harvest

The AABM recreational fishery includes all catch in northwest WCVI (Areas 25–27, 125-127; Figure 1) between October 16 through June 30, and the catch outside of one NM offshore from July 1 through October 15, plus all the catch in southwest WCVI (Areas 21–24) between October 16 through July 31, and outside one NM offshore from August 1 to October 15. Catch inside the surf line and outside the AABM periods specified above is included in ISBM fishery catch.

The outer WCVI sport fishery occurs primarily in the Barkley Sound, outer Clayoquot Sound, and Nootka Sound areas. The majority of fishing effort occurs from mid-July to September in NWVI and August through mid-September in the SWVI. Creel surveys are generally conducted from late May or early June to September 30. For the outside sport fishery the Chinook daily bag limit was two Chinook greater than 45 cm. Barbless hooks were mandatory.

The 2008 WCVI AABM sport catch estimate during the creel period was 50,556 Chinook based on an estimated 31,168 boat trips (Table 1.5). Catch rates were determined from anglers interviewed at 17 landing sites from June 1 to September 30. No creel surveys occurred between the months of October and May, as effort is relatively low during this period.

Table 1.5. Outer WCVI AABM sport fishery catches of Chinook by Pacific Fishery Management Areas in 2008 representing catch during the creel survey periods only.

Pacific Fishery Management Areas						
21/121	**23/123**	**24/124**	**25/125**	**26/126**	**27/127**	**Total**
3,810	22,410	10,124	5,410	4,186	4,616	50,556

1.2 ESTIMATES OF INCIDENTAL MORTALITIES IN AABM FISHERIES

1.2.1 SEAK Fisheries

Estimates of encounters and incidental mortality (IM) in SEAK fisheries are shown in Table 1.6. The 2008 troll encounters were calculated from a regression of historical encounter estimates and troll effort. The regression predicts encounter estimates from troll effort using encounter estimates obtained from direct fishery observation programs conducted from 1998-2006. Sport fishery survey data from 2008 has not yet been tabulated, but 2007 sport fishery encounters were updated from the number of Chinook caught and released as recorded on the annual Statewide Harvest Survey (mail-in survey) forms. Estimates for the net fishery included IM for both seine and gillnet fisheries. Legal and sublegal CNR purse seine encounters were calculated by multiplying the Chinook catch from the retention purse seine fishery by the ratio of either the total legal or total sublegal Chinook encountered in the CNR purse seine study from 1985-1987 to the total Chinook caught in the retention purse seine fishery from 1985-1987 (CTC 2004c). For the gillnet fishery, drop-off mortality was estimated as a percentage of the landed catch using the regional-specific drop-off rate for SEAK (CTC 2004c). Encounter estimates are multiplied by the respective IM rate found in CTC (1997) to obtain estimates of IM.

Table 1.6. Estimated encounters and incidental mortality in SEAK troll, net and sport fisheries for 2003-2008. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality. In the net fishery, 21"-28" fish from both retention and non-retention periods are included in the CNR numbers.

Panel A - Troll and Sport Fisheries

		Troll				Sport		
		Retention Fishery		CNR Fishery		Retention	Releases	
Year		Legal Drop-off	Sublegal	Legal	Sublegal	Legal Drop-off	Legal	Sublegal
2003	Encounters	NA[1]	51,705	31,844	18,312	NA[1]	18,881	40,705
2003	IM	2,459	13,598	6,974	4,816	1,756	3,002	6,472
2004	Encounters	NA[1]	23,862	65,194	31,747	NA[1]	29,675	44,009
2004	IM	2,575	6,276	14,277	8,349	1,995	4,718	6,997
2005	Encounters	NA[1]	45,432	42,670	20,097	NA[1]	20,489	56,364
2005	IM	2,441	11,949	9,345	5,286	2,280	3,258	8,962
2006	Encounters	NA[1]	32,552	37,374	28,215	NA[1]	20,702	51,567
2006	IM	2,113	8,561	8,185	7,420	2,514	3,292	8,199
2007	Encounters	NA[1]	48,141	40,358	26,381	NA[1]	15,587	52,761
2007	IM	1,920	12,661	8,838	6,938	2,227	2,478	8,389
2008	Encounters	NA[1]	27,915	41,774	27,307	NA[1]	NA	NA
2008	IM	1,005	7,342	9,148	7,182	924	NA	NA

Panel B - Net Fisheries and Total

		Net Fisheries				Total Incidental Mortality	
		Seine			Gillnet		
		Retention	CNR Fishery		Legal		
Year		< 21"	> 28"	21"-28"	Drop-off	Legal	Sublegal
2003	Encounters	866	11,742	38,836	NA[1]		
2003	IM	866	5,989	28,545	93	20,272	54,297
2004	Encounters	498	20,754	68,642	NA[1]		
2004	IM	498	10,585	50,452	198	34,348	72,572
2005	Encounters	484	0	0	NA[1]		
2005	IM	484	0	0	163	17,487	26,680
2006	Encounters	756	0	0	NA[1]		
2006	IM	756	0	0	152	16,254	24,936
2007	Encounters	793	8,201	27,124	NA[1]		
2007	IM	793	4,183	19,936	140	19,786	48,717
2008	Encounters	116	126	415	NA[1]		
2008	IM	116	64	305	169	11,309	14,945

[1]Drop-off mortality is computed from landed catch times a percentage that incorporates a gear-specific encounter ratio and release mortality rate.

1.2.2 British Columbia Fisheries

1.2.2.1 NBC Fisheries

Table 1.7 summarizes encounter and IM estimates for the NBC AABM fisheries from 2002 to 2008 by size class during retention and Chinook Non-retention (CNR) fishing periods. Encounters for the NBC troll fishery are based on phone-in hails. Encounters for the QCI sport fishery are based on creel survey and logbook programs. The table presents IM estimates using size specific rates from the CTC (1997). The estimated total mortality of Chinook salmon in the NBC AABM fisheries in 2008 was 102,971 nominal fish, including 95,647 fish in the landed catch and 7,324 fish from IM (Table 1.7).

Table 1.7. Estimated encounters and incidental mortalities (nominal fish) in NBC AABM troll and sport fisheries for 2002-2008. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality.

		Troll				Sport		Total Incidental Mortalities	
		Retention Fishery		CNR Fishery		Retention	Releases [2]		
Year		Legal & Sublegal Drop-off	Sublegal releases	Legal	Sublegal	Legal & Sublegal Drop-off	Legal	Legal	Sublegal
2002	Encounters	NA [1]	2,608	5,109	129	NA [1]	42,226		
	IM	1,752	618	1,032	31	3,250	8,107	14,098	692
2003	Encounters	NA [1]	1,721	11,798	148	NA [1]	47,549		
	IM	2,335	408	2,383	35	3,747	9,129	17,566	472
2004	Encounters	NA [1]	2,605	31,460	489	NA [1]	116,741		
	IM	2,848	617	6,355	116	5,106	22,414	36,511	725
2005	Encounters	NA [1]	1,009	20,414	118	NA [1]	60,987		
	IM	2,972	239	4,124	28	4,747	16,457	23,535	284
2006	Encounters	NA [1]	10,409	1,556	102	NA [1]	32,480		
	IM	2,692	2,467	314	24	4,451	6,236	13,693	2,491
2007	Encounters	NA [1]	9,315	1,896	212	NA [1]	35,527		
	IM	1,415	2,208	383	50	4,209	6,821	12,828	2,258
2008	Encounters	NA [1]	4,277	1,707	140	NA [1]	10,649		
	IM	886	1,014	345	33	3,002	2,045	6,277	1,047

[1] Drop-off mortality is computed from landed catch times a percentage that incorporates a gear-specific encounter ratio and release mortality rate.

[2] Releases are reported as 'mixed' sizes. However, since >90% of such releases are legal-sized, all reported releases were considered to be legal-sized for the purpose of estimating incidental mortality.

1.2.2.2 WCVI Fishery

The estimated total mortality of Chinook salmon in the WCVI AABM fisheries in 2008 was 156,804 nominal fish, including 145,726 Chinook in the landed catch and 11,078 fish from IM (Table 1.8). The estimated IM included 7,815 legal and 3,263 sublegal fish in nominal numbers of fish. The estimates for the commercial troll fisheries in 2008 are based on landed catch multiplied by rates of encounter from previous years. Table 1.8 summarizes encounter and IM

estimates for these fisheries by size class during retention. In 2008 there were no CNR fishing periods in the AABM fishery.

Table 1.8. Estimated encounters and incidental mortalities (nominal fish) in WCVI troll and sport AABM fisheries. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality.

		Troll				Sport			Total Incidental Mortalities	
		Retention Fishery		CNR Fishery		Retention	Releases			
		Legal				Legal				
Year		Drop-off	Sublegal	Legal	Sublegal	Drop-off	Legal	Sublegal	Legal	Sublegal
2002	Encounters	NA [1]	20,645	0	0	NA [1]	12,326	7,507		
	IM	2,260	4,893	0	0	2,174	2,367	1,441	6,801	6,334
2003	Encounters	NA [1]	15,479	63	7	NA [1]	23,156	6,333		
	IM	2,581	3,793	13	0	1,851	4,446	1,216	8,891	5,009
2004	Encounters	NA [1]	10,430	0	0	NA [1]	16,601	5,485		
	IM	2,875	2,472	0	0	2,697	3,084	1,053	8,656	3,525 [2]
2005	Encounters	NA [1]	10,328	0	0	NA [1]	19,323	4,571		
	IM	2,556	2,448	0	0	3,497	3,710	878	9,763	3,326
2006	Encounters	NA [1]	6,918	3,121	740	NA [1]	11,882	6,048		
	IM	1,854	1,640	626	175	2,519	2,281	1,161	7,280	2,976
2007	Encounters	NA [1]	8,626	0	0	NA [1]	5,973	15,590		
	IM	1,568	2,044	0	0	3,196	1,147	2,993	5,911	5,037
2008	Encounters	NA [1]	7,233	0	0	NA [1]	14,483	8,068		
	IM	1,546	1,714	0	0	3,488	2,781	1,549	7,815	3,263

[1] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.
[2] Sublegal dropoffs are included with sublegal incidental release mortalities

1.3 REVIEW OF ISBM FISHERIES

1.3.1 Canadian ISBM Fisheries

ISBM fisheries include all fisheries that harvest or release Chinook salmon in British Columbia under PST jurisdiction outside areas governed by AABM fisheries. In 2008, 189,104 Chinook were harvested in Canadian ISBM fisheries in British Columbia and Canadian sections of the Alsek, Taku and Stikine Transboundary rivers. Total estimated IM in the Canadian ISBM fisheries in 2008 was 20,368 legal and 4,836 sublegal sized Chinook. The distribution of the landed catches and estimated incidental mortalities in Canadian ISBM fisheries are presented in Table 1.9. Historical catches in Canadian fisheries are in Appendixes A2 through A7.

Table 1.9. Landed catch and incidental mortalities in Canadian ISBM fisheries for 2008.

Region	Fishery	Landed Catch	Release Legal	Release Subiegal	Total IM - Legal	Total IM - Subiegal	Total Nominal Mortality
Transboundary Rivers	Gillnet	10,831	0	0	498	0	498
(Taku, Stikine, Alsek)	Freshwater Sport	327	0	0	23	0	23
	First Nations	920	0	0	42	0	42
Regional Total		*12,078*	*0*	*0*	*563*	*0*	*563*
Northern BC	Gillnet	5,938	874	0	1,100	0	1,100
	Seine	0	2,485	0	1,789	0	1,789
	Tyee Test Fishery	1,401	0	0	64	0	64
	Tidal Sport	11,970	1,463	180	826	35	860
	Freshwater Sport	0	0	0	0	0	0
	First Nations	14,963	0	0	688	0	688
Regional Total		*34,272*	*4,822*	*180*	*4,468*	*35*	*4,502*
Central BC	Troll	0	700	57	141	14	155
	Gillnet	1,133	0	0	52	0	52
	Seine	0	34	147	24	106	130
	Tidal Sport	2,909	46	561	210	108	317
	Freshwater Sport	276	0	0	19	0	19
	First Nations	3,018	0	0	139	0	139
Regional Total		*7,336*	*780*	*765*	*585*	*227*	*812*
WCVI Terminal	Gillnet	4,848	2	0	223	0	223
	Seine	3,409	0	0	2,454	0	2,454
	Tidal Sport	24,855	1,720	7,194	2,045	1,381	3,426
	Freshwater Sport	0	0	0	0	0	0
	First Nations	12,159	0	0	559	0	559
	Seine	0	0	0	0	0	0
Regional Total		*45,271*	*1,722*	*7,194*	*5,282*	*1,381*	*6,663*
Johnstone Strait	Troll	0	0	0	0	0	0
	Gillnet	48	4	0	6	0	6
	Seine	0	443	0	319	0	319
	Tidal Sport	3,730	829	3,156	417	606	1,022
	Freshwater Sport	0	0	0	0	0	0
	First Nations	324	0	0	15	0	15
Regional Total		*4,102*	*1,276*	*3,156*	*756*	*606*	*1,362*
Georgia Strait	Troll	0	0	0	0	0	0
	Gillnet	0	0	0	0	0	0
	Seine	0	156	0	112	0	112
	Tidal Sport	8,836	377	8,395	682	1,612	2,294
	Freshwater Sport	0	0	0	0	0	0
	First Nations	4,848	0	0	223	0	0
Regional Total		*13,684*	*533*	*8,395*	*1,017*	*1,612*	*2,629*
Juan de Fuca	Gillnet	172	95	0	98	0	98
	Seine	0	429	0	309	0	309
	Tidal Sport	22,263	1,460	5,080	1,816	975	2,792
	First Nations	0	0	0	0	0	0
Regional Total		*22,435*	*1,984*	*5,080*	*2,223*	*975*	*3,198*
Fraser River	Gillnet	4,165	89	0	276	0	276
	Freshwater Sport	18,733	13,810	0	3,944	0	3,944
	First Nations	27,028	96	0	1,253	0	1,253
Regional Total		*49,926*	*13,995*	*0*	*5,472*	*0*	*5,472*
Grand Total		**189,104**	**25,112**	**24,770**	**20,368**	**4,836**	**25,204**

1.3.2 Southern U.S. Fisheries Harvest

Southern U.S. fisheries of interest to the PSC, generally those north of Cape Falcon, Oregon, are managed in accordance with legal obligations stemming from treaties between Indian tribes and the United States. In 1974, *U.S. v Washington* set forth sharing obligations to meet Treaty fishing rights in western Washington. Treaty rights of Columbia River tribes were defined by *U.S. v Oregon*, and the Columbia River Fisheries Management Plan was implemented in 1977. In reporting these fisheries, fishermen are termed "treaty" if they are fishing under the Native Treaty fishing rights and "non treaty" otherwise. As specified in the 1999 agreement, all southern U.S. fisheries are ISBM fisheries. Historical catches in these fisheries may be found in Appendices A.8 through A.14.

1.3.2.1 Strait of Juan de Fuca and the San Juan Islands

The preliminary estimate of the 2008 Chinook catch in Strait of Juan de Fuca tribal net fisheries directed at sockeye salmon is 4536. An additional 43 Chinook were taken during the coho management period. The preliminary estimate of the 2008 Chinook catch in the San Juan Islands tribal net fishery directed at sockeye salmon is 27. Non-treaty landings had no Chinook landings. The preliminary estimate of the 2008 Strait of Juan de Fuca treaty troll fishery is 1,816 Chinook through December. The catch estimate does not include catches from Area 4B during the May-September PFMC management period. These are included in the North of Cape Falcon troll summary. Historic catch estimates are provided in Appendices A.8 and A.9 for the Strait of Juan de Fuca and San Juan areas respectively.

1.3.2.2 Puget Sound

The preliminary estimate of the 2008 tribal and non-tribal net fishery harvests in Puget Sound marine areas is 64,541 (58,436 tribal, 6,105 non-tribal) for all marine areas excluding 4B, 5, and 6, 6A, 6B, and 6C in the Strait of Juan de Fuca. Additional tribal net harvest occurred in freshwater fisheries with a preliminary estimate of 36,781. Estimates of the sport catch in 2008 are not yet available. Historic catch tables for Puget Sound exclusive of the San Juans are provided in Appendix A.10.

1.3.2.3 Washington Coast

Tribal commercial and ceremonial and subsistence fisheries harvested a total of 8,811 Chinook in north coastal rivers (Quinault, Queets, Hoh, and Quillayute) in 2008. An additional 1,048 Chinook were harvested by the Makah tribal fisheries in the Waatch and Sooes rivers.

Harvest in Grays Harbor includes catch from both the Humptulips and Chehalis rivers. The 2008 tribal net fisheries harvested an estimated 1,878 Chinook. The 2008 non-Indian commercial net harvest in Grays Harbor was 579 Chinook. Approximately 3,595 Chinook were harvested by non-Indian commercial net fisheries in Willapa Bay in 2008.

From Grays Harbor north, recreational fisheries were implemented based upon pre-season tribal-state agreements and were subject to in-season adjustment. Estimates of sport fishery catches for Washington coastal terminal fishing areas in 2008 are not available. Historic catch estimates for Washington Coastal inside fisheries are shown in Appendix A.11.

Ocean fisheries off the coasts of Washington and Oregon are managed under regulations recommended by the Pacific Fishery Management Council. The estimated catch of Chinook salmon in commercial troll fisheries from Cape Falcon to the U.S.-Canada border in 2008 was 35,100 for both treaty and non-treaty fisheries combined. Estimated catch in the ocean recreational fishery north of Cape Falcon in 2008 was 15,457 Chinook. Historic catch estimates for U.S. ocean fisheries north of Cape Falcon are shown in Appendix A.12

1.3.2.4 Columbia River

Chinook from the Columbia River are divided into eight stock groups for management purposes. These groups are delineated by run timing and area of origin: (1) spring run originating below Bonneville Dam; (2) spring run originating above Bonneville Dam; (3) summer run originating above Bonneville Dam; (4) fall run returning to Spring Creek Hatchery; (5) fall run originating in hatchery complexes below Bonneville Dam; (6) wild fall run originating below Bonneville Dam; (7) upriver bright fall run; and (8) mid-Columbia bright fall hatchery fish.

In 2008, the total annual harvest for all fisheries (spring, summer and fall) in the Columbia River basin was 265,157 Chinook, which included non-Indian commercial net harvest of 49,207, sport harvest of 77,297 and treaty Indian commercial, ceremonial and subsistence harvest of 138,653 Chinook.

1.3.2.5 Ocean Fisheries, Cape Falcon to Humbug Mountain

Most harvest in ocean fisheries off Oregon's coast is comprised of a mixture of southern Chinook stocks not included in the PSC agreement. These stocks do not migrate north into the PSC jurisdiction to any great extent. Some stocks originating from Oregon coastal streams do migrate into PSC fisheries, including the North Oregon Coastal (NOC) and Mid-Oregon Coastal (MOC) stock aggregates. The NOC stocks are harvested only incidentally in Oregon ocean fisheries, while the contribution of MOC stocks to Oregon ocean fisheries is believed to be much greater. Catch statistics are readily available only for a terminal area troll fishery on one MOC stock at the mouth of the Elk River. Late season (October-December) troll catch in the Elk River terminal troll fishery in 2008 was 220 Chinook.

Recreational catch of these two stock groups occurs primarily in estuary and freshwater areas as mature fish return to spawn and is reported through a "punch card" accounting system. These data are only available more than two years after the current season. Therefore, we can only report the riverine and estuarine sport catch though 2006 for the NOC and MOC groups. The 2007 punch card estimate of estuary and freshwater catch for the NOC and MOC groups is 25,684 Chinook. Historic catch estimates for the Elk River troll fishery and the estuary and freshwater sport fisheries targeting on MOC and NOC stocks are shown in Appendix A.14.

1.4 ESTIMATES OF INCIDENTAL MORTALITY FOR SOUTHERN U.S. FISHERIES

Table 1.10 shows estimates of incidental mortalities for Washington Coastal and Puget Sound fisheries. Sources of estimates are shown in the table footnotes. No estimates of incidental mortalities were provided for 2008 for ocean fisheries south of Cape Falcon or Columbia River fisheries.

Table 1.10. Estimated incidental mortality in Southern US troll, net, and sport fisheries for 2008.

Fishery	Troll	Net[1]	Sport
Strait of Juan de Fuca	136	24	3,538
San Juan Islands	0	1,060	2,752
Puget Sound	0	3,040	33,569
Washington Coast	0	451	NA
North of Cape Falcon	7,300	0	1,800[3]

[1] Assume 3% net dropout rate
[2] Estimates from FRAM
[3] Estimates from direct observations

2 CHINOOK ESCAPEMENTS

2.1 INTRODUCTION

The Agreement (Pacific Salmon Treaty Fishing Annexes & Related Agreements, June 30, 1999) established a Chinook management program that:

"introduces harvest regimes that are based on estimates of Chinook abundance, that are responsive to changes in Chinook production, that take into account all fishery induced mortalities and that are designed to meet MSY or other agreed biologically-based escapement objectives"

This chapter compares annual escapement estimates with maximum sustained yield (MSY) or other accepted biologically-based escapement goals established for Chinook stocks. The CTC has reviewed and accepted escapement goals for 24 stocks included in this report. For these stocks, the CTC can evaluate stock status in relation to the accepted goals. For stocks without accepted goals, the CTC must rely on the time series of escapement data and the agency commentary for the individual stocks to provide a perspective on stock status and escapement trends.

Annual reports prior to 2006 included a section on the framework used for escapement assessments and narratives for each stock that included a description of escapement methodology, escapement goal basis, and agency comments. For these more detailed stock narratives and descriptions of escapement methods, please refer to the 2004 Catch and Escapement Report (CTC 2005a).

2.1.1 MSY or Biologically-Based Escapement Goals

2.1.1.1 Origin of Goals

Escapement goals accepted by the CTC were based on analyses that followed the guidelines developed in the CTC escapement goal report (CTC 1999). In the stock-specific narratives presented with the escapement graphs, the agencies may refer to agency goals, but only CTC-accepted escapement goals and ranges (in gray shading) are shown on the escapement graphs and used for evaluation. Table 2-1 presents the status of escapement goal reviews by the CTC for stocks identified as escapement indicator stocks.

Table 2.1. PSC Chinook escapement indicator stocks, where shading indicates that there is not a CTC accepted escapement goal for PSC assessment of stock status.

Presence in Treaty Attachments					Stock Group In Att. I-V	Escapement Indicator	Region	Run
SEAK	NBC/ QCI	WCVI	BC ISBM	SUS ISBM				
✔						Situk	Yakutat	Spring
✔						Alsek	Yakutat	Spring
✔						Taku	TBR	Spring
✔						Stikine	TBR	Spring
✔						Chilkat	N Inside	Spring
✔						King Salmon	N Inside	Spring
✔						Andrew Creek	C Inside	Spring
✔						Unuk	S Inside	Spring
✔						Chickamin	S Inside	Spring
✔						Blossom	S Inside	Spring
✔						Keta	S Inside	Spring
✔	✔		✔		Northern/Central B.C.	Yakoun	NBC-Area 1	Summer
✔	✔		✔		Northern/Central B.C	Nass	NBC-Area 3	Spring/Summer
✔	✔		✔		Northern/Central B.C	Skeena	NBC-Area 4	Spring/Summer
			✔		Northern/Central B C.	Dean	CBC-Area 8	Spring
						Rivers Inlet	CBC-Area 9	Spring/Summer
✔	✔		✔		WCVI Falls	Artlish, Burman, Kaouk, Tahsis, Tashish, Marble	WCVI	Fall
✔	✔		✔		Upper Strait of Georgia	Klinaklini , Kakwickan, Wakeman, Kingcome, Nimpkish	UGS	Sum/Fall
			✔		Lower Strait of Georgia	Cowichan/Nanaimo[2]	LGS	Fall
✔	✔		✔		Fraser Early[1] (Spr/Sum)	Fraser Spring 1 3	Fraser River	Spring
✔	✔		✔		Fraser Early[1] (Spr/Sum)	Fraser Spring 1.2	Fraser River	Spring
✔	✔		✔		Fraser Early[1] (Spr/Sum)	Fraser Summer 1 3	Fraser River	Summer
✔	✔		✔		Fraser Early[1] (Spr/Sum)	Fraser Summer 0.3	Fraser River	Summer
		✔	✔	✔	Fraser Late	Harrison	Fraser River	Fall
			✔	✔	N P S Natural Springs	Nooksack	NC/PS	Spring
			✔	✔	N. P.S. Natural Springs	Skagit Spring	NC/PS	Spring
		✔	✔	✔	P S. Natural Summer/Falls	Skagit Summer/Fall	NC/PS	Summer/Fall
		✔	✔	✔	P S. Natural Summer/Falls	Stillaguamish	NC/PS	Summer/Fall
		✔	✔	✔	P S Natural Summer/Falls	Snohomish	NC/PS	Summer/Fall
		✔	✔	✔	P S. Natural Summer/Falls	Lake Washington	NC/PS	Summer/Fall
		✔	✔	✔	P S. Natural Summer/Falls	Green	NC/PS	Summer/Fall

-continued-

Table 2.1. Continued.

Presence in Treaty Attachments					Stock Group In Att. I-V	Escapement Indicator	Region	Run
SEAK	NBC/ QCI	WCVI	BC ISBM	SUS ISBM				
✔	✔			✔	WA Coastal Fall Natural	Hoko	WAC/JDF	Fall
						Quillayute Summer	WAC/JDF	Summer
✔	✔			✔	WA Coastal Fall Natural	Quillayute Fall	WAC/JDF	Fall
						Hoh Spring/Summer	WAC/JDF	Summer
✔	✔			✔	WA Coastal Fall Natural	Hoh Fall	WAC/JDF	Fall
						Queets Spring/Summer	WAC/JDF	Summer
✔	✔			✔	WA Coastal Fall Natural	Queets Fall	WAC/JDF	Fall
						Grays Harbor Spring	WAC/JDF	Spring
✔	✔			✔	WA Coastal Fall Natural	Grays Harbor Fall	WAC/JDF	Fall
						Col. Upriver Spring	CR	Spring
✔	✔	✔		✔	Col Upriver Summers	Mid-Columbia Summers	CR	Summer
✔	✔	✔		✔	Columbia River Falls	Col Upriver Bright	CR	Fall
✔	✔	✔		✔	Columbia River Falls	Lewis	CR	Fall
✔	✔	✔		✔	Columbia River Falls	Deschutes	CR	Fall
✔	✔			✔	Far N Migrating OR Coast	Nehalem	NOC	Fall
✔	✔			✔	Far N Migrating OR Coast	Siletz	NOC	Fall
✔	✔			✔	Far N Migrating OR Coast	Siuslaw	NOC	Fall
						South Umpqua	MOC	Fall
						Coquille	MOC	Fall

[1] The escapement indicator stocks listed in the Annex tables for this group are Upper Fraser, Middle Fraser, and Thompson. The Fraser spring/summer group is split into these 4 escapement indicators to represent the stock group by life history type rather than geographically

[2] An escapement goal was established for the Cowichan in 2005, a goal for Nanaimo is still pending

2.2 ESCAPEMENT ASSESSMENT

The Agreement directs the CTC to "report annually on the escapement of naturally spawning Chinook stocks in relation to the agreed escapement objectives referred to below, evaluate trends in the status of stocks, and report on progress in rebuilding of naturally spawning Chinook stocks" (Annex IV, Chapter 3, paragraph 1.b.iii). In this report, escapement assessments include stock specific graphs of escapements and commentary, presented to provide a perspective on stock status and escapement trends through 2008. More detailed commentary for each stock can be found in previous CTC catch and escapement reports, e.g. CTC (2005a).

The escapement goals and 2008 escapements for the 24 stocks with CTC accepted escapement goals are listed in Table 2-2. For 12 of these stocks, the agency escapement goal is defined as a range; for the remaining 12 stocks, the escapement goal is defined as a point estimate. In 2008, escapements were within the goal range for seven stocks, above the range or S_{MSY} point estimate for six stocks, and below the goal for eleven stocks.

Table 2.2. Escapement goals and 2008 escapements for PSC Chinook escapement indicator stocks with biologically-based goals accepted by the CTC.

Stock	Region	Stock Group	Escapement Goal	2008 Escapement
Situk	SEAK	Yakutat	500-1,000	413
Alsek (Klukshu index)	SEAK/TBR	Yakutat	1,100-2,300	465
Chilkat	SEAK	Northern Inside	1,750-3,500	3,233
Taku	SEAK/TBR	TBR	30,000-55,000	27,383
Stikine	SEAK/TBR	TBR	14,000-28,000	18,164
King Salmon	SEAK	Northern Inside	120-240	120
Andrew Creek	SEAK	Central Inside	650-1,500	981
Unuk (survey index)	SEAK	Southern Inside	650-1,400	655
Chickamin (survey index)	SEAK	Southern Inside	450-900	1,111
Blossom (survey index)	SEAK	Southern Inside	250-500	257
Keta (survey index)	SEAK	Southern Inside	250-500	363
Harrison	BC	Fraser River	75,100-98,500	41,603
Cowichan	BC	LGS	6,500	1,109
Mid Col. Upr. Summer	CR	Columbia River	17,857	20,786
Col. Upriver Brights	CR	Columbia River	40,000	76,599
Lewis	CR	Columbia River	5,700	5,200
Quillayute Fall	WAC	WA Coast	3,000	4,306
Queets Spring/Summer	WAC	WA Coast	700	305
Queets Fall	WAC	WA Coast	2,500	3,082
Hoh Spring/Summer	WAC	WA Coast	900	550
Hoh Fall	WAC	WA Coast	1,200	1,774
Nehalem	ORC	NOC	6,989	3,810
Siletz	ORC	NOC	2,944	1,202
Siuslaw	ORC	NOC	12,925	11,119

The CTC has now assessed the status of stocks with CTC-accepted goals for return years 1999-2008. Over this time period, the number of stocks with CTC-accepted goals has increased from 16 to 24 (Figure 2.1). From 1999-2006, the percentage of stocks below escapement goals or goal ranges has varied from 4% to 25%. In 2007, the percentage of stocks below goals or goal ranges increased to 54%, but dropped to 46% in 2008.

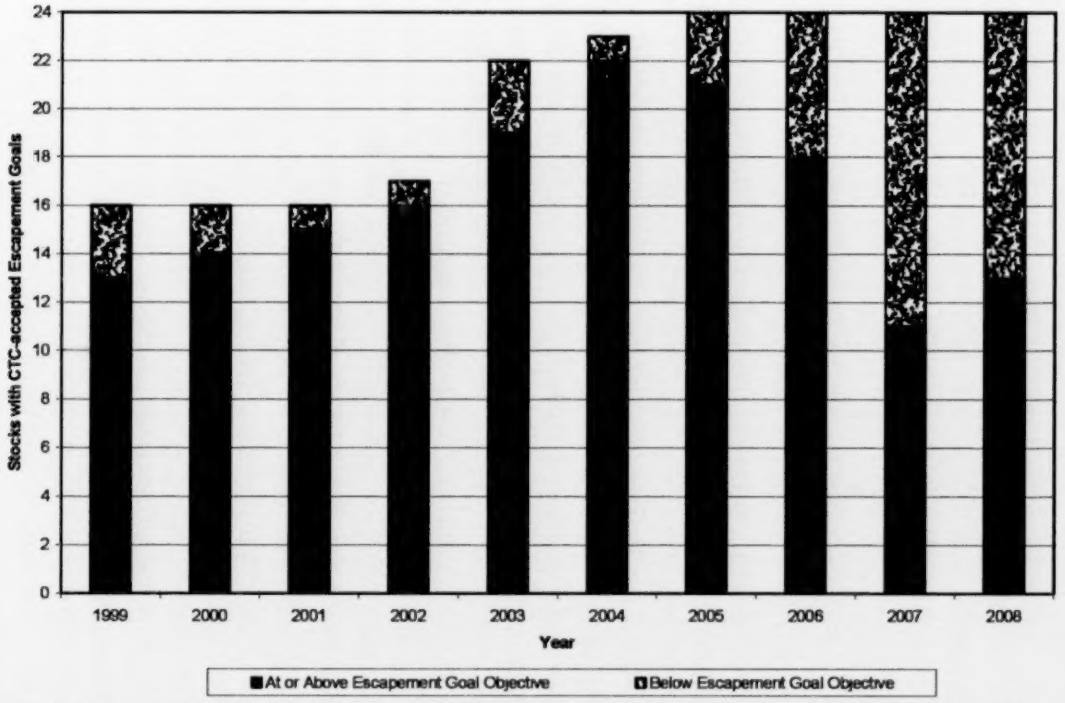


Figure 2.1. Number and status of stocks with CTC-accepted escapement goals for years 1999-2008.

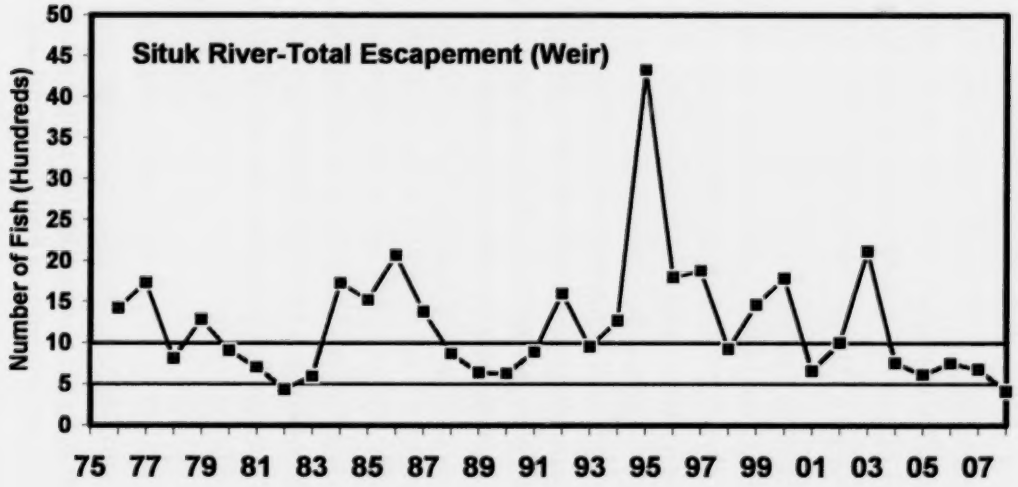
2.3 STOCK SPECIFIC GRAPHS AND COMMENTARIES

Graphs of time series of escapements and terminal runs for Chinook stocks are included in sections for Alaska, Canada, and Washington/Columbia River/Oregon. A limited commentary is also provided for each stock; more detail on historical assessments and escapement goals for individual stocks in available in CTC (2005a). Each graph contains the name of the stock and the type of data depicted (total escapement, index counts, terminal runs, etc.). For the graphs that include estimates of the terminal run size, the harvests in terminal runs include both jacks and adults in some cases, whereas the escapement is usually reported in adults. The *x*-axis represents calendar years. All escapement goals accepted by the CTC are shown except for the LGS stock group because this group includes both the Cowichan and Nanaimo stocks and only the Cowichan has a CTC accepted goal. Historical escapement and terminal run data are provided for SEAK stocks in Appendix B.1, for Canadian stocks in Appendix B.2, for Puget Sound in Appendix B.3, Washington Coastal stocks in Appendix B.4, for Columbia River stocks in Appendix B.5 and Oregon Coastal stocks in Appendix B.6.

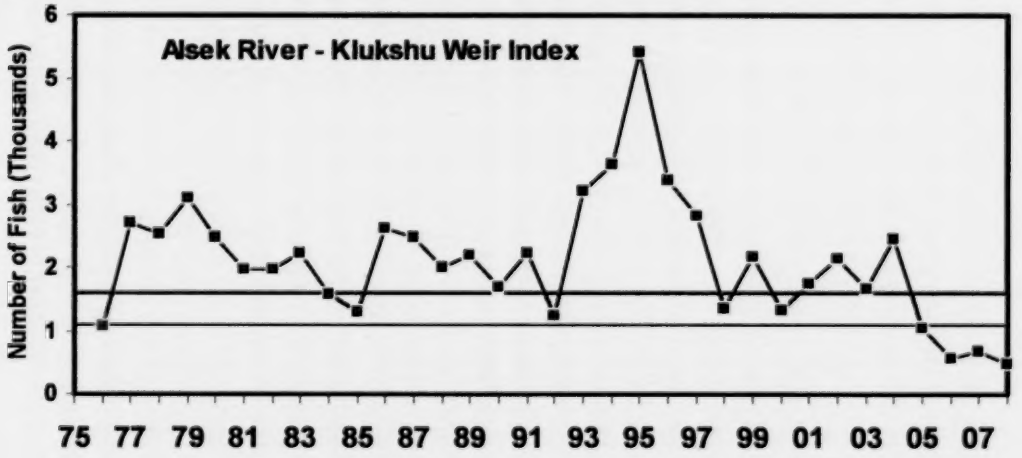
2.3.1 SEAK/TBR Stocks

Of the 11 SEAK/TBR stocks included in the escapement assessment, the Situk, Chilkat, Taku, King Salmon, and Stikine rivers and Andrew Creek include estimates of total escapement of large fish, Chinook salmon > 659 mm mid-eye to fork (MEF) length. Escapement estimates for the Alsek, Unuk, Chickamin, Blossom, and Keta rivers are index counts of large fish. These

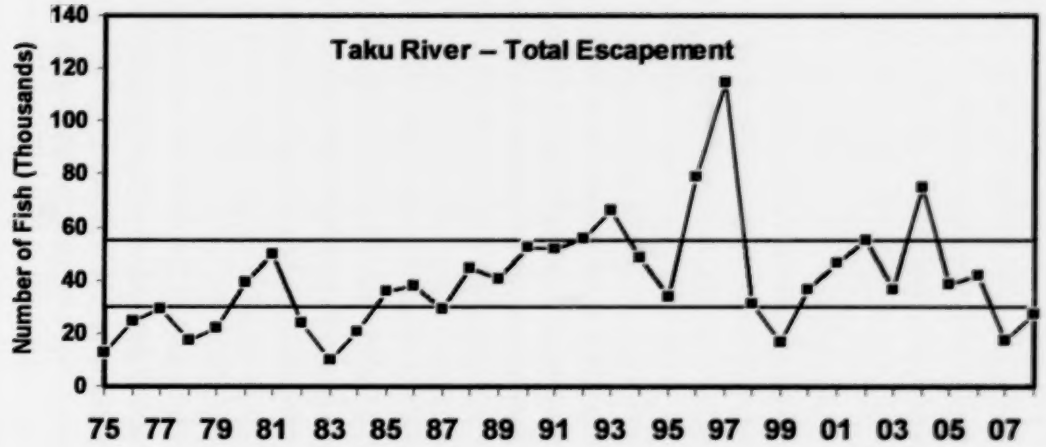
indices are enumerated from a weir on the Alsek River and foot/aerial helicopter surveys on the other four rivers that represent a fraction of the total escapement. Except for the Chilkat River, survey methods have been standardized for all systems since 1975. The assessment of Chilkat River Chinook salmon was standardized in 1991 as an annual mark-recapture estimate of escapement. Escapement goals have been defined as a range for the SEAK/TBR stocks, shown by the grey shaded area on the graphs.



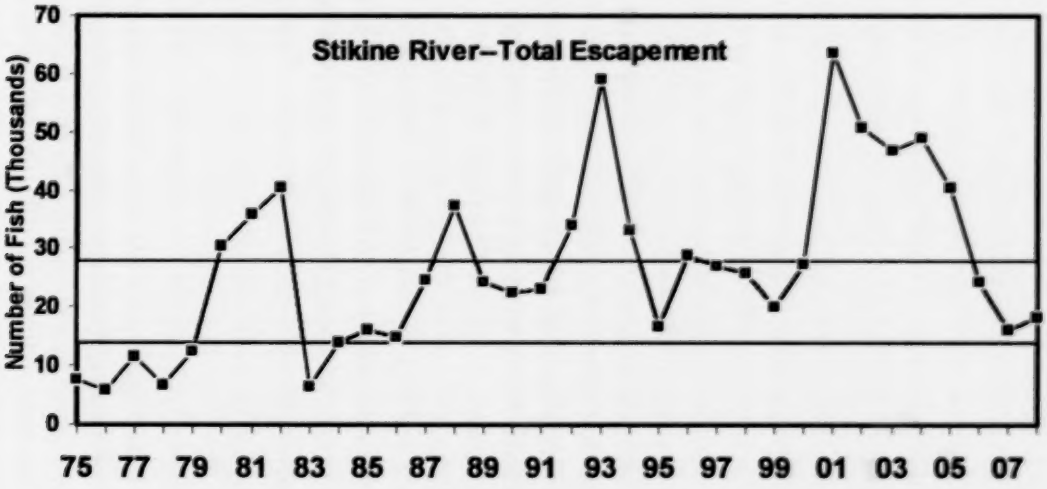
The Situk River is a small non-glacial system that supports a moderate run of outside-rearing Chinook salmon. Escapements are based on weir counts minus upstream sport fishery harvests (if any) estimated from an on-site creel survey and a postseason mail-out survey. The weir has been operated annually since 1976, and was also operated from 1928-1955.



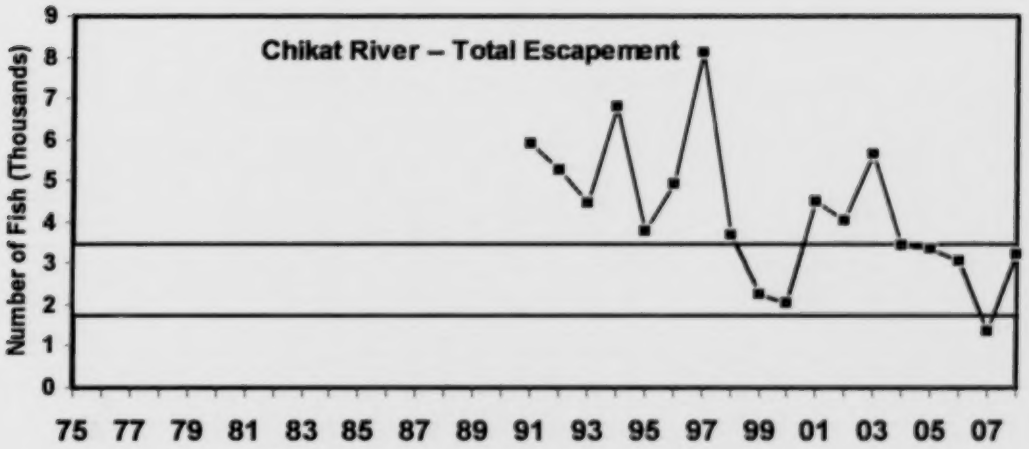
Commentary: The Alsek River is large Transboundary glacial system that supports a moderate run of outside-rearing Chinook salmon. Since 1976 index escapements (shown above) have been determined using a weir operated at the Klukshu River.



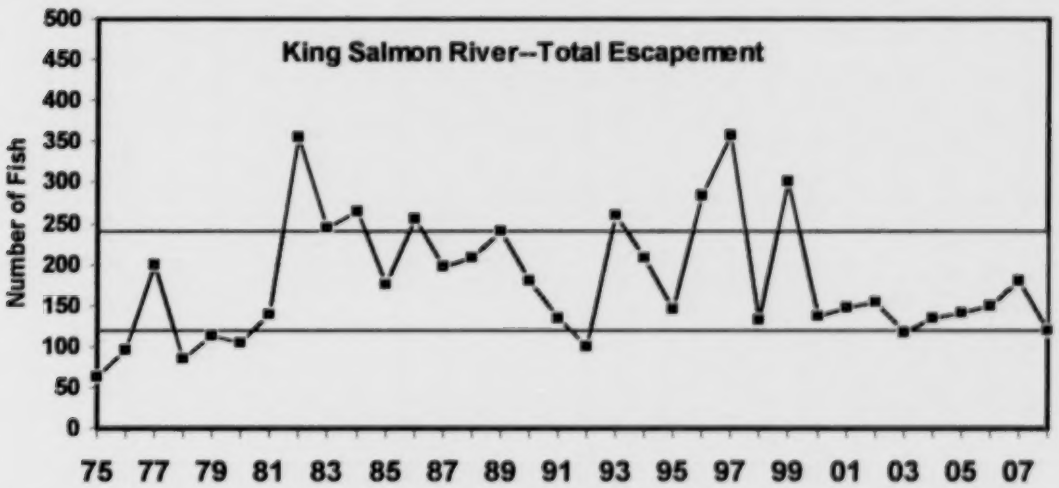
Commentary The Taku River is a large Transboundary glacial system that supports a large run of outside-rearing Chinook salmon. In 1989, 1990, and 1995-2006 escapements were determined using mark-recapture methods. In other years since 1975, aerial counts were expanded by a factor of 5.2, the 5-year average of the ratio of the mark-recapture estimates to aerial survey counts (McPherson et al. 2000).



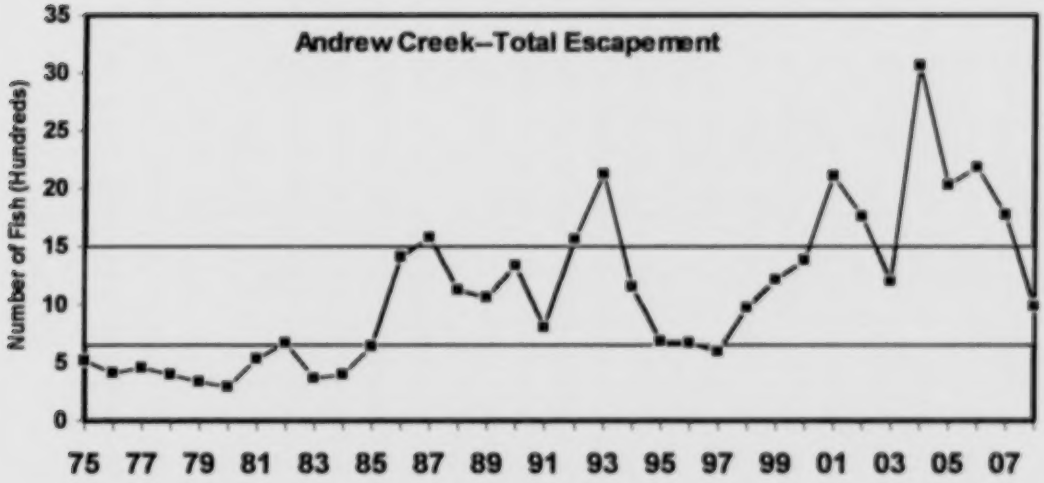
Commentary The Stikine River is a large Transboundary glacial system that supports a large run of outside-rearing Chinook salmon. From 1975 through 1984 index escapements were made using survey counts and since 1985 counts were made using a weir at the Little Tahltan River. Since 1996 mark-recapture experiments were performed indicating the index escapements represented 17% to 20% of the total escapement (Pahlke and Etherton 1999).



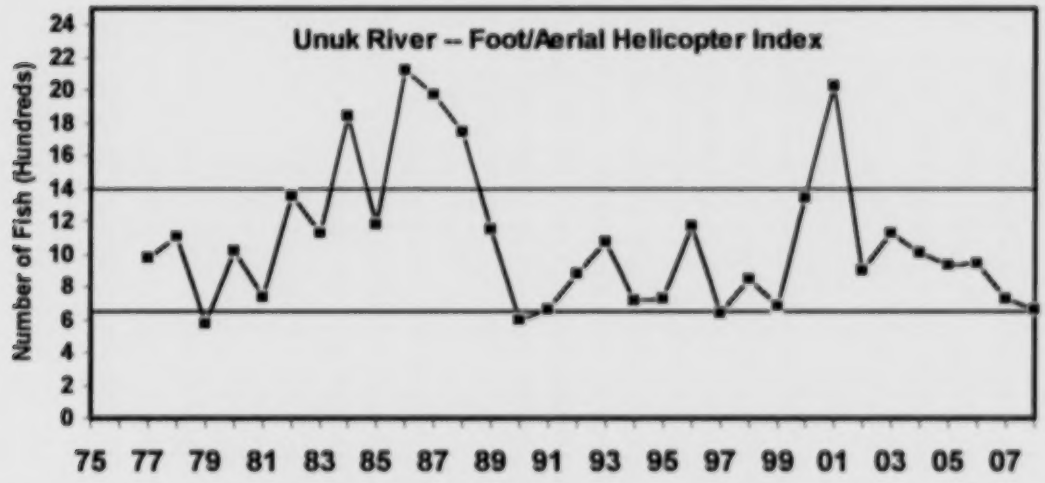
Commentary The Chilkat River is a moderate-sized glacial system moderate run of inside-rearing Chinook salmon. Since 1991, escapements have been estimated using mark-recapture methods (Ericksen and McPherson 2003). The current biological escapement goal of 1,750 to 3,500 was formally accepted by the CTC in 2005.



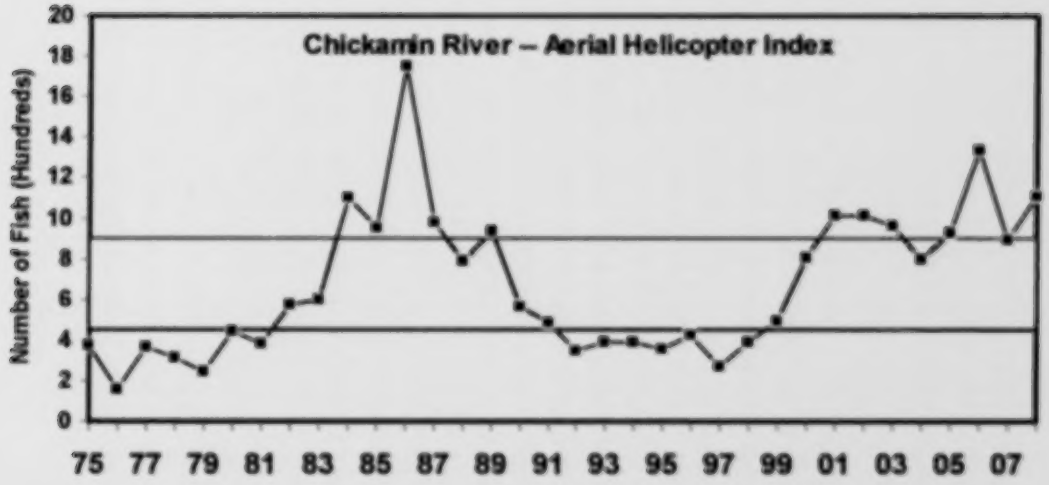
Commentary: The King Salmon River is a small non-glacial system that supports a small run of inside-rearing Chinook salmon. Escapements are based upon weir counts from 1983 to 1992 and expansions of index counts from 1971 to 1982 and 1993 to 2006. The 10 years of weir data showed that on average the escapement was 1.5 times the index count (McPherson and Clark 2001).



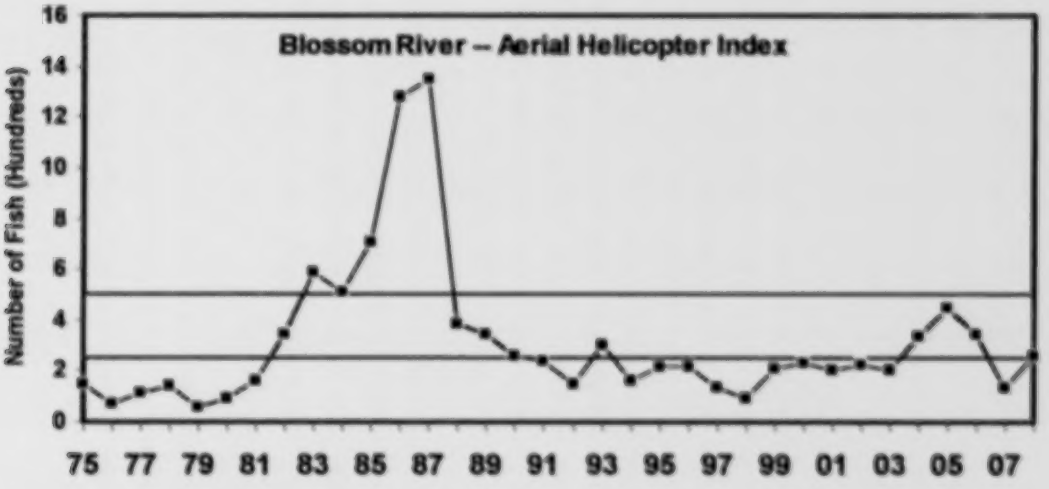
Commentary: Andrew Creek, a tributary of the lower Stikine River, is a small non-glacial system that supports a moderate run of inside-rearing Chinook salmon. Escapements are based upon weir counts from 1976 to 1984 and expansions of index counts in 1975 and 1985 to 2006. Four years of concurrent weir and index count data were used to estimate the expansion factor of 2.0.



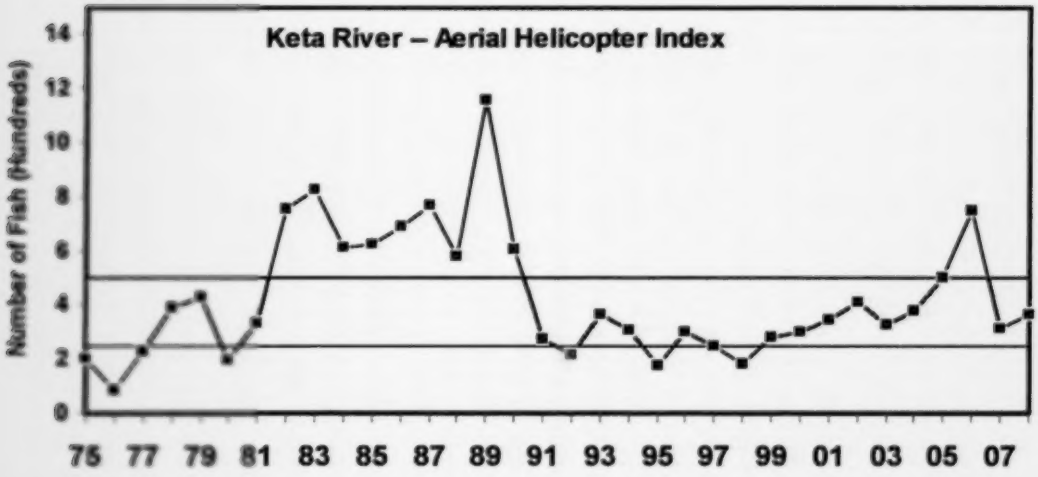
Commentary: The Unuk River is a moderate-sized glacial system that supports a moderate run of inside-rearing Chinook salmon. Indices of escapement since 1977 are based on the sum of peak index counts from six main tributaries (Pahlke 2003). Mark-recapture studies were implemented in 1994 and annually since 1997 (Weller and McPherson 2003). The current estimated expansion factor is 5.0 for index counts.



Commentary: The Chickamin River is a moderate-sized glacial system that supports a moderate run of inside-rearing Chinook salmon. Indices of escapement since 1975 are based on the sum of peak index counts from eight main tributaries (Pahlke 2003). Mark-recapture studies were performed in 1995, 1996, and 2001-2005. The current estimated expansion factor is 4.6 for index counts.



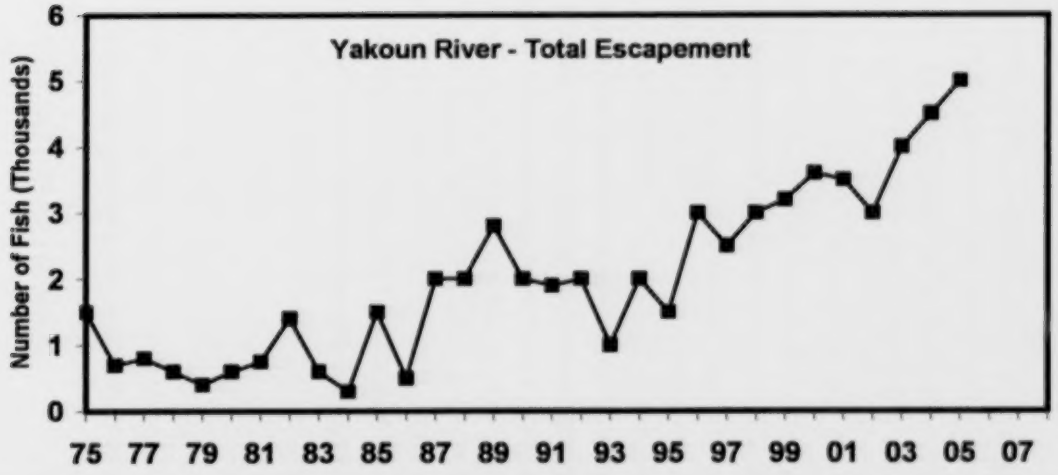
Commentary: The Blossom River is a small-sized non-glacial system that supports a small run of inside-rearing Chinook salmon. Indices of escapement since 1975 are based on the sum of peak index counts (Pahlke 2003). Mark-recapture studies performed in 1998 and 2004 to 2006 estimated an expansion factor range of 2.0 to 4.0.



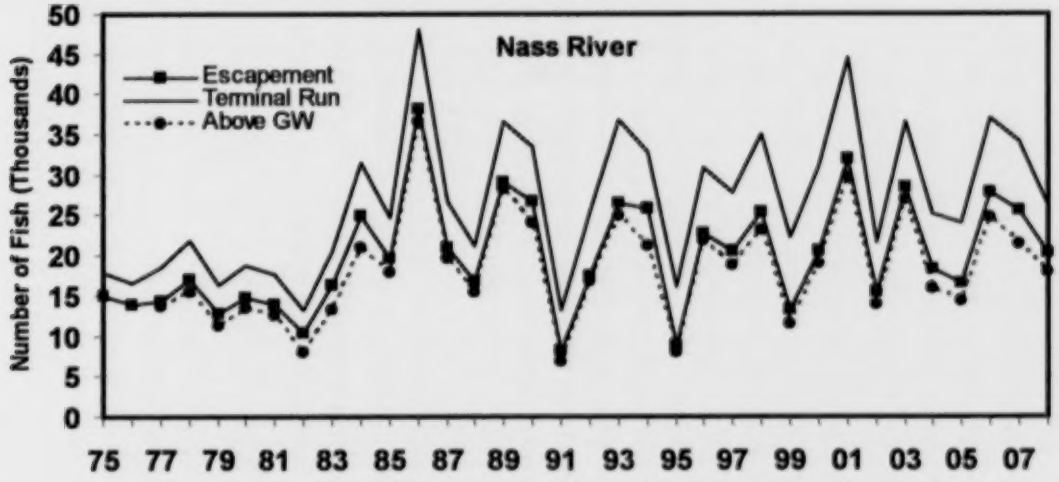
Commentary: The Keta River is a small-sized non-glacial system that supports a small run of inside-rearing Chinook salmon. Indices of escapement since 1975 are based on the sum of peak index counts (Pahlke 2003). Mark-recapture studies were performed 1998 to 2000 (Freeman et al. 2001). The current estimated expansion factor is 3.0 for index counts.

2.3.2 Canadian Stocks

Since the beginning of the Chinook rebuilding program of the 1985 PST, escapement goals for Canadian Chinook stocks were generally based on doubling the average escapements recorded from 1979-1982. The doubling was based on the premise that Canadian Chinook stocks were over-fished and that doubling the escapement would still be less than the optimal escapement estimated for the aggregate of all Canadian Chinook populations (see stock-recruitment curve in "Technical Basis of PSC Catch Ceilings," Figure 1, Attachment 4, PSC file 72006; PSC Office, Vancouver, BC). Doubling was also expected to be a large enough change in escapements to allow detection of the change in numbers of spawners and the subsequent production. The escapement goals of the Canadian stocks are currently being reviewed.

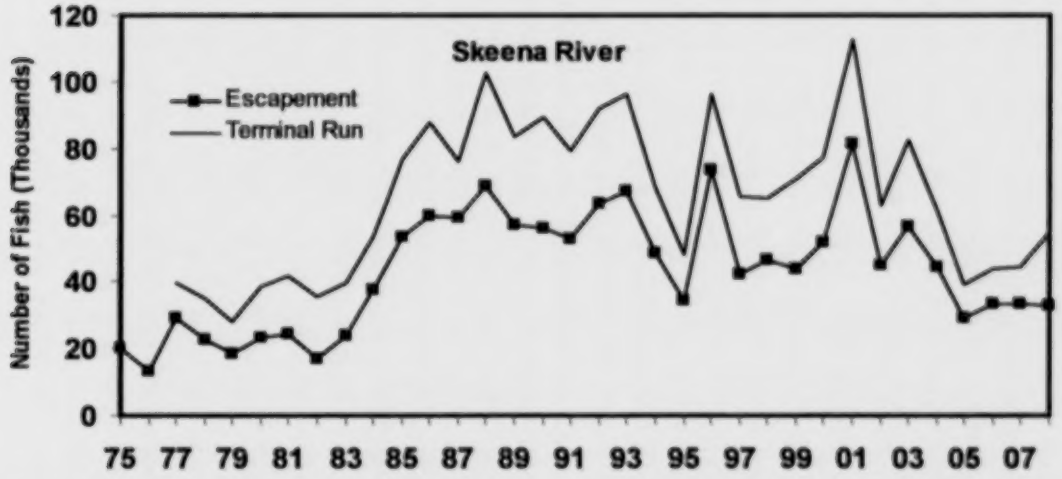


Commentary: The Yakoun River is the only significant Chinook-producing stream on the Queen Charlotte Islands. Chinook spawn primarily at the outlet of Yakoun Lake and are a summer-run stock. Visual estimates of escapement are made by foot surveys of the system. These estimates are then expanded into a total estimate of spawning escapement in the system. The effort spent on escapement surveys has declined in recent years and their accuracy (i.e. ability to estimate the actual escapement) is unknown.

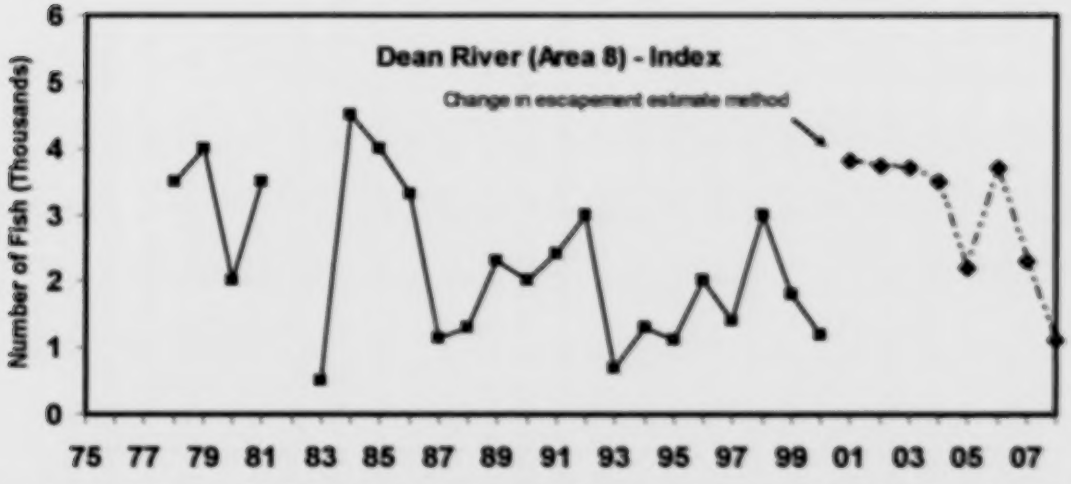


Commentary: The Nass River is the largest river in Area 3, representing a group of approximately 25 streams in Area 3. Prior to 1992, CDFO observations of escapement were based on visual counts. Mark-recapture programs have been conducted since 1992 by the Nisga'a Fisheries to estimate total spawning escapement in the Nass River. The Nass mark-recapture program uses two fish wheels at Gitwinksihlkw (GW) in the lower Nass canyon to apply tags and two wheels at Grease Harbor in the upper canyon and the Meziadin River fishway for recovery. A modified Petersen model was used to estimate the total population of Chinook past the tagging location. Tags were also recovered in upriver fisheries and on the spawning grounds. Spawning escapements were calculated as the estimated Chinook population past GW

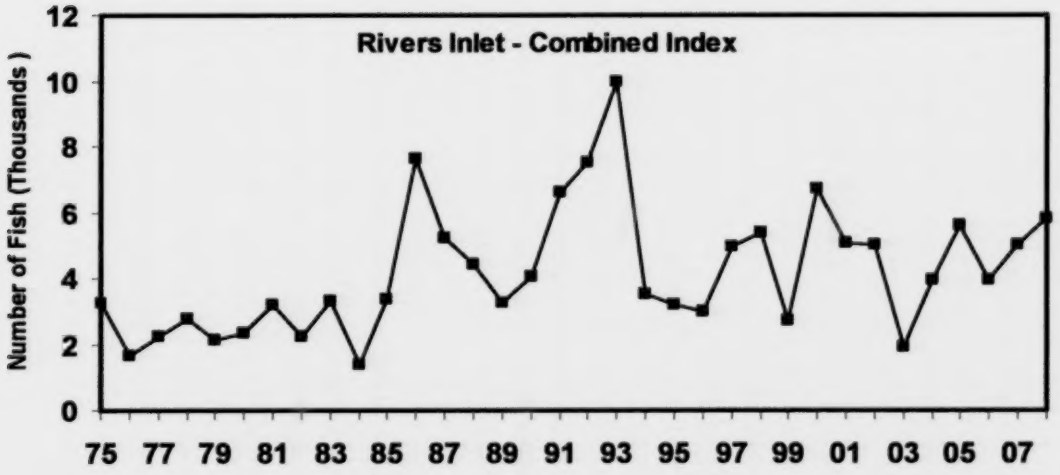
from the mark-recapture studies, less upriver catches in sport and First Nations fisheries. Three tributaries with Chinook populations enter the Nass River below GW. Visual estimates augmented by fence counts of the Kincolith River in 2001, 2002, 2005 and 2007 were used to estimate Nass River Chinook escapements below the fish wheels.

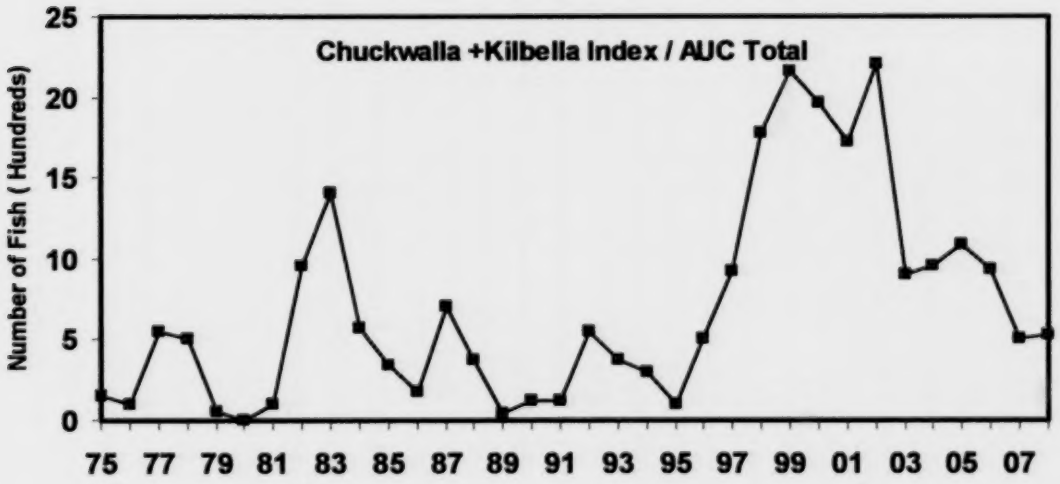


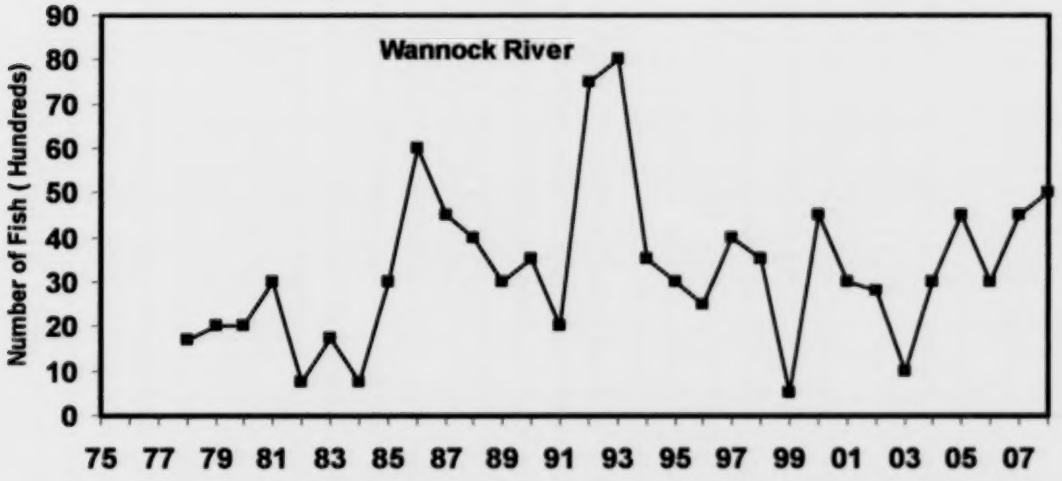
Commentary The Skeena Chinook escapements above represent 40 streams within the Skeena watershed which are consistently surveyed. The Skeena supports over 75 separate Chinook spawning populations, but three (Kitsumkalum, Morice, and Bear Rivers) account for about 70% of the total abundance. A second group of populations (Ecstall, Kispiox, and Babine rivers) have annual returns ranging from 1,000 to 5,000 spawners, and comprise about 13% of Skeena returns. Escapement estimates are generally based on visual observations from helicopter, fixed wing aircraft and/or from stream walking surveys. Fish counting weirs are present on the Babine, Sustut and Kitwanga Rivers. The Kitsumkalum River is the exploitation rate indicator stock for the Skeena Chinook complex. Spawning escapements in the Kitsumkalum have been estimated using a mark-recapture program since 1984.



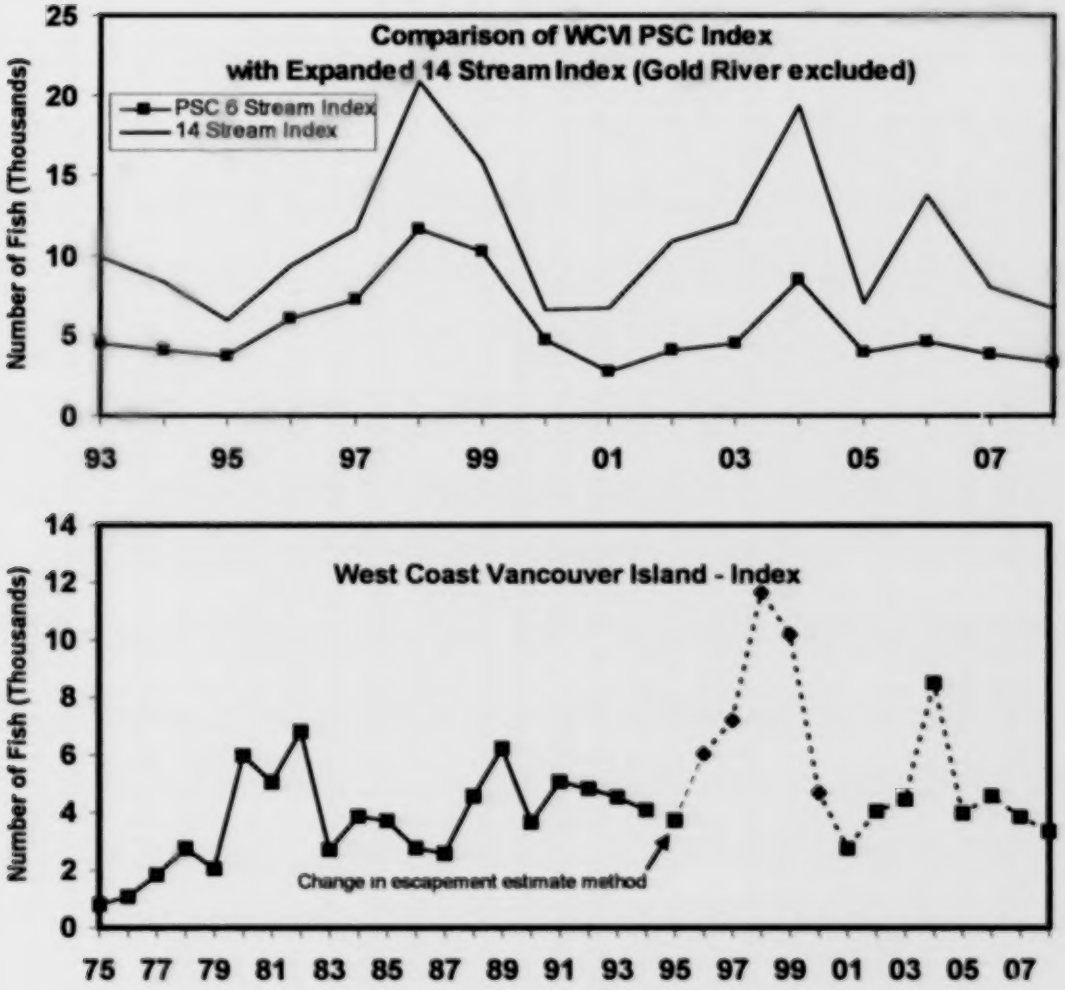
Commentary The Area 8 Chinook stock consists of seven non-enhanced systems, but the Dean River is the main spawning population. Of all Chinook- producing streams in Areas 5 to 10, the Dean is the best indicator in terms of consistent survey coverage and methodology. Chinook returning to the Dean River have early-summer timing and most spawn in the lower river by July. Up until 2000, counts of spawning Chinook were made during 1-3 surveys and the peak count used as the escapement index. Survey counts were sometimes expanded to account for sections of the river that could not be surveyed in any year, but the counts were not extrapolated to total escapement of Chinook to the river. Since 2001, the annual number of aerial surveys has increased, allowing the calculation of area-under-the-curve (AUC) escapement estimates. In some years viewing conditions were poor and did not result in counts necessary to produce an AUC estimate. In these years maximum likelihood estimates were used to produce estimates as was the case in 2004 (3,500). A Chinook mark-recapture program was initiated on the Dean River in 2006 to generate expansion factors for converting the current spawner indices (AUC estimates from helicopter flights) into estimates of total escapement. The preliminary estimate of escapement based on the mark-recapture program was 5,478 in 2006 compared to the maximum likelihood estimate of 3,689. For the purposes of this report however, the index of escapement is reported in the figures. Although no mark-recapture program was conducted in 2008, escapement was estimated at 1,100 based on an AUC.


Rivers Inlet - Combined Index
Number of Fish (Thousands)
12
10
8
6
4
2
0
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05 07

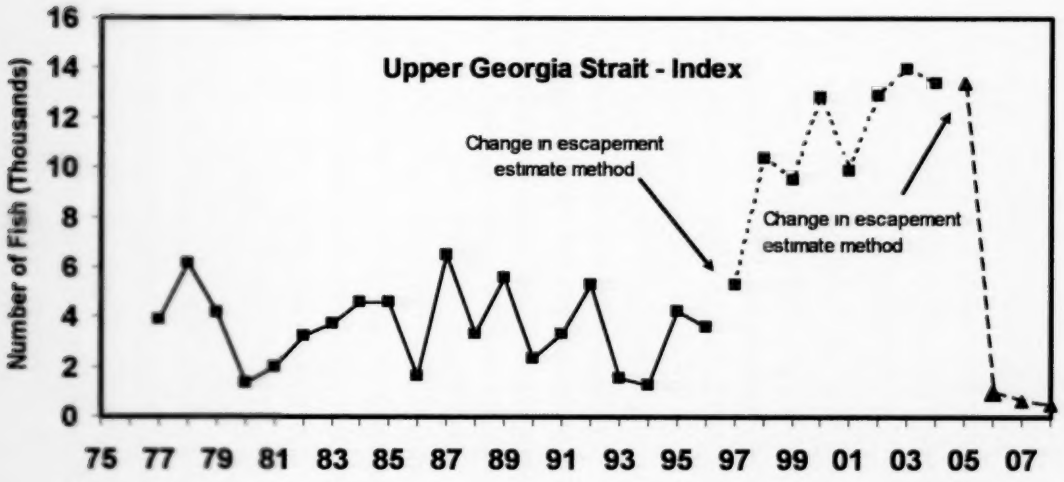

Chuckwalla +Kilbella Index / AUC Total
Number of Fish (Hundreds)
25
20
15
10
5
0
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05 07



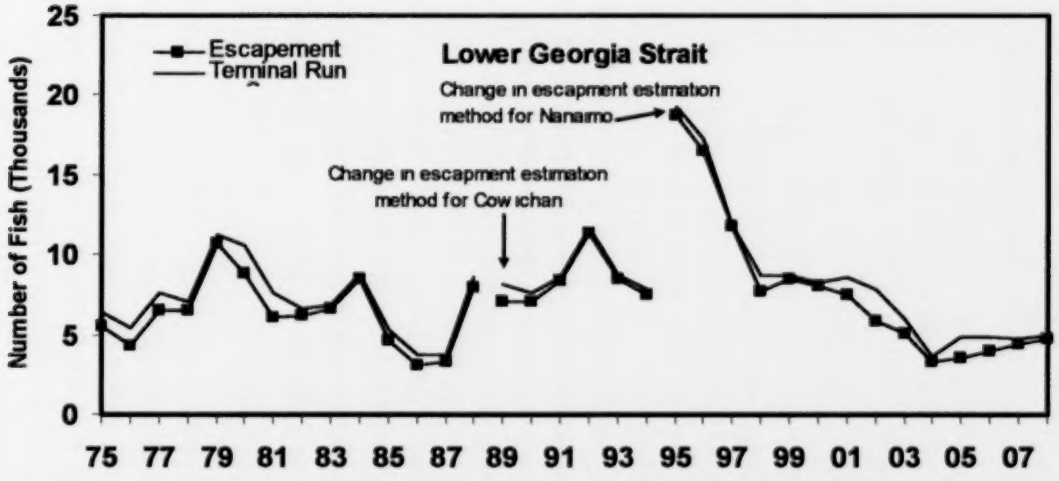
Commentary: The Wannock, Chuckwalla, and Kilbella Rivers are the primary Chinook streams in Area 9 (Rivers Inlet area). Small tributaries of Owikeno Lake also contain Chinook but these populations are much smaller. The Wannock River contains the largest Chinook population, averaging 5,200 Chinook in the 1990s, while the Chuckwalla and Kilbella together averaged around 300. The Wannock River drains Owikeno Lake, is about six kilometers long, and is wide and turbid. The Chuckwalla and Kilbella rivers are much longer, drain from coastal mountains, and their visibility is much more variable depending on local weather (glacial flour to clear). The timing of these stocks also differs: the Wannock has late summer/fall run timing; the other two are early summer Chinook stocks. Escapement estimates in the Chuckwalla and Kilbella rivers are derived from aerial surveys, whereas Wannock escapement is derived from expansions of carcass counts to estimate spawning escapement.



Commentary: The WCVI index represents the sum of escapements for six rivers (Marble, Tahsis, Burman, Artlish, Kaouk, and Tahsish), which were chosen to provide an 'index' of escapement for wild WCVI stocks in general. These stocks were chosen based on historical consistency of data quality. CDFO has developed a 14 stream expanded index which includes escapements to the six stream index plus the following WCVI streams: Colonial/Cayegle Creeks (Area 26), Leiner (Area 25), Megin, Bedwell/Ursus, Moyeha (Area 24) and Sarita, Nahmint (Area 23), and San Juan (Area 21). In 2005, the Colonial/Cayegle escapement was not available, and was therefore not included in the 14 stream index. In 2007, a mark-recapture program was conducted on the Burman River, in addition to the regular swim and foot surveys. However, the escapement estimate used for the index followed the same methodology since 2005.



Commentary: The Upper Strait of Georgia (UGS) stock index consists of four river systems (Klinaklini, Kakweiken, Wakeman, Kingcome) in Johnstone Strait mainland inlets and the Nimpkish River on northeast Vancouver Island. The accuracy of escapement estimates in the mainland inlet systems is likely poor due to low visibility of glacial systems, remote access, and timing of surveys. Escapement estimates have primarily been based on aerial counts which may not encompass Chinook run-timing. Swim surveys and stream walks have been conducted in the Nimpkish River. A fish wheel program implemented on the Klinaklini in 1997 was discontinued in 2004. Based on the portion of the assessment program that continued in 2005, estimated abundance in 2005 was assumed to be the same as in 2004. Since 2006, the accuracy of the escapement estimate for the Klinaklini is considered to be very poor. Consequently, escapement for this stock was not included in the 2006 or 2007 index. No fish were observed in the Kakweiken River in 2006 or 2007.



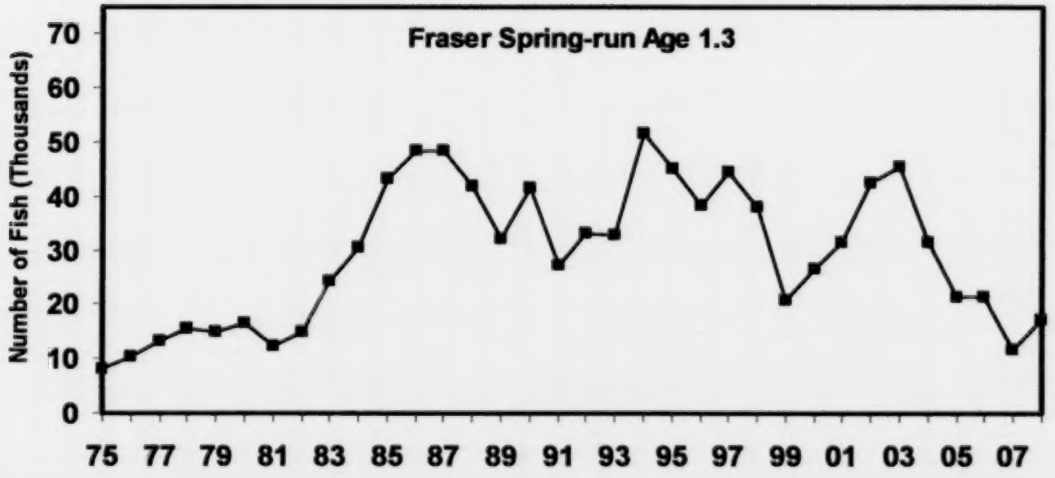
Commentary: Lower Strait of Georgia (LGS) rivers monitored for naturally spawning fall Chinook escapement are the Cowichan and Nanaimo rivers. Total Chinook returns to the Cowichan and Nanaimo rivers have been estimated since 1975. Prior to 1988, escapement estimates from the Cowichan River were derived from swim and aerial surveys. This approach was also used for the Nanaimo River prior to 1995. Since 1988 a counting fence has been used in the Cowichan River, and since 1995 carcass mark-recapture surveys have been used in the Nanaimo River. Since 2005, AUC estimates have been used in the Nanaimo River and a tagging study was used to determine survey life in 2006. An escapement goal of 6,500 for the Cowichan River was accepted by the CTC in 2005; a goal for the Nanaimo is still pending.

2.3.3 Fraser River Stocks

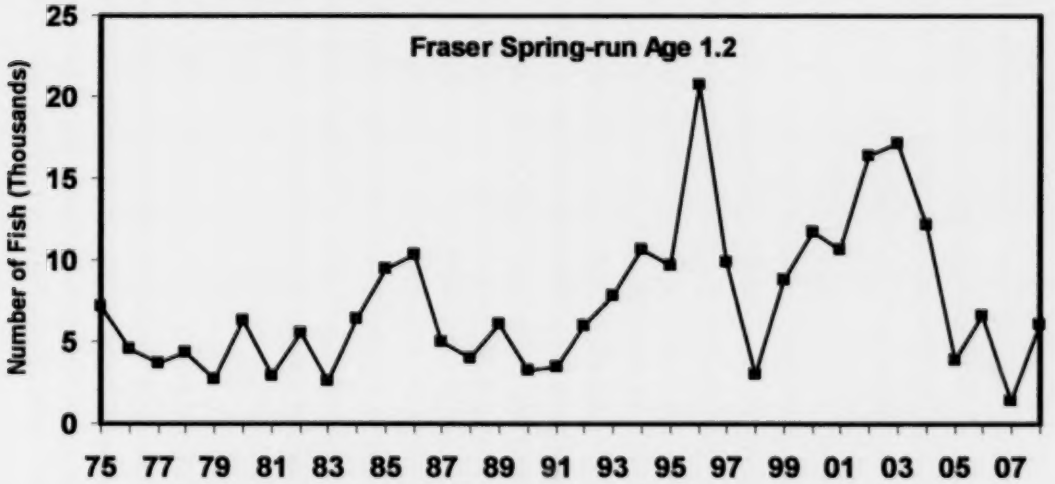
The Fraser River watershed is the largest Canadian producer of Chinook salmon. Fraser Chinook consist of many local populations as described in CTC (2002b).

Much of the knowledge about the status of Fraser Chinook is based on spawner escapement data. Most data are from visual surveys, which are generally biased low, although many estimates are considered to be reasonably precise. Visual survey data are generated from aerial surveys and the escapement estimate is usually obtained by dividing the peak count by 0.65 (Farwell et al. 1999). The CDFO continues to evaluate the appropriateness of this expansion factor and AUC methodology through calibration studies. Counting fences and mark-recapture projects exist for some systems, although most of the time series of escapement data from these projects are relatively short.

For populations other than the Harrison River, habitat-based models are being developed to estimate spawning capacity and spawner abundance producing maximum sustained yield. This habitat-based assessment will initially focus on predictive models based on Chinook stock-recruitment relationships, although other habitat-based approaches will also be considered.

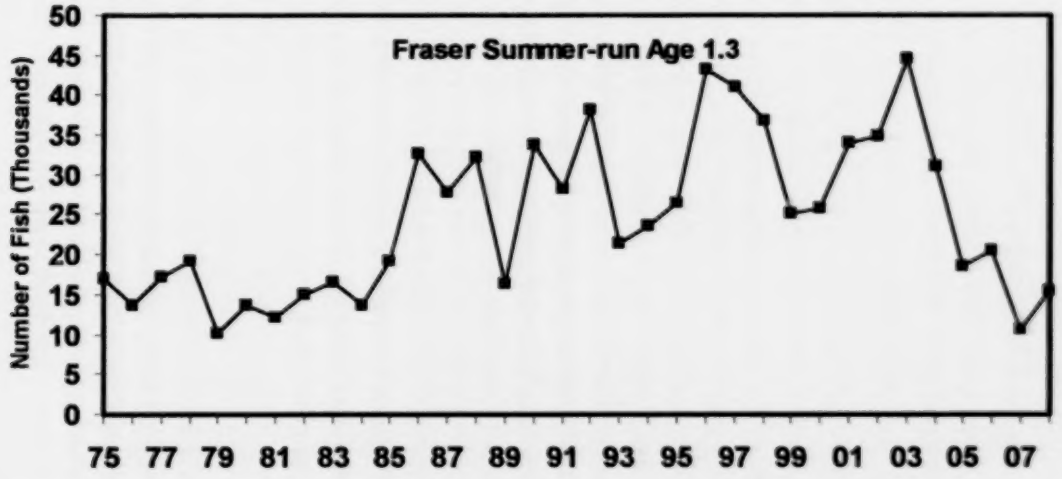


Commentary: This aggregate includes the Upper Pitt River and Birkenhead River stocks in the Lower Fraser, and the spring-run Chinook of the Mid and Upper Fraser, North Thompson, and South Thompson, but excluding those of the Lower Thompson (CTC 2002b). Stocks upstream of Prince George include the McGregor and Torpy River systems. Fence counts are employed at the Salmon River in Salmon Arm (South Thompson). Estimates for all other systems were generated from aerial or foot surveys, typically, by dividing the peak count by 0.65. Escapements declined sharply in 2007, continuing the trend that started in 2004. Escapement to the aggregate was estimated at 17,181 in 2008.

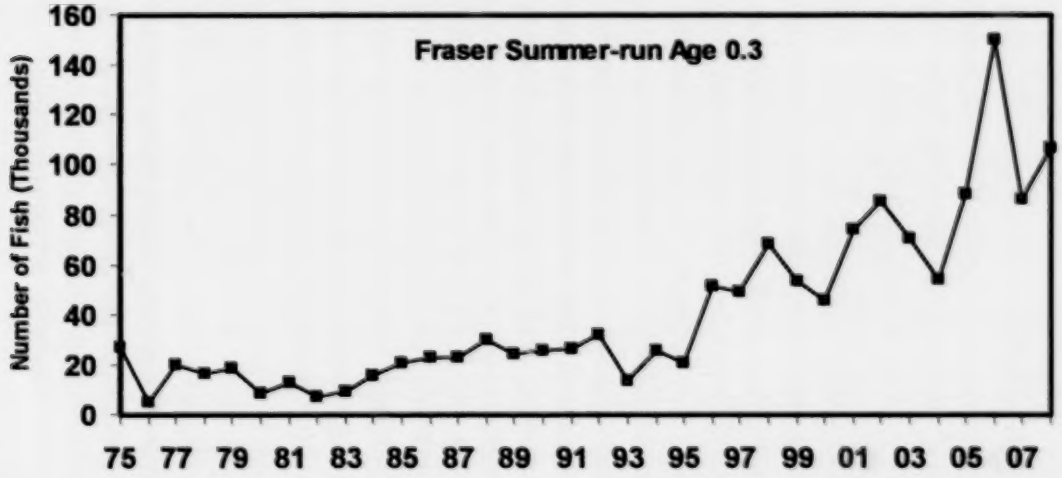


Commentary: The Fraser Spring-Run Age 1.2 aggregate includes six smaller body size populations that spawn in the Lower Thompson River tributaries, Louis Creek of the North Thompson and the spring-run fish of Bessette Creek in the South Thompson (CTC 2002b). Escapement estimates for Nicola, Spius, Coldwater, Louis and Bessette are generated from visual surveys, either from aerial over-flights or stream walks and dividing the peak counts by

0.65. Escapements to Bonaparte River and Deadman River are estimated by resistivity counters. The aggregate escapement was estimated to be 6,121.

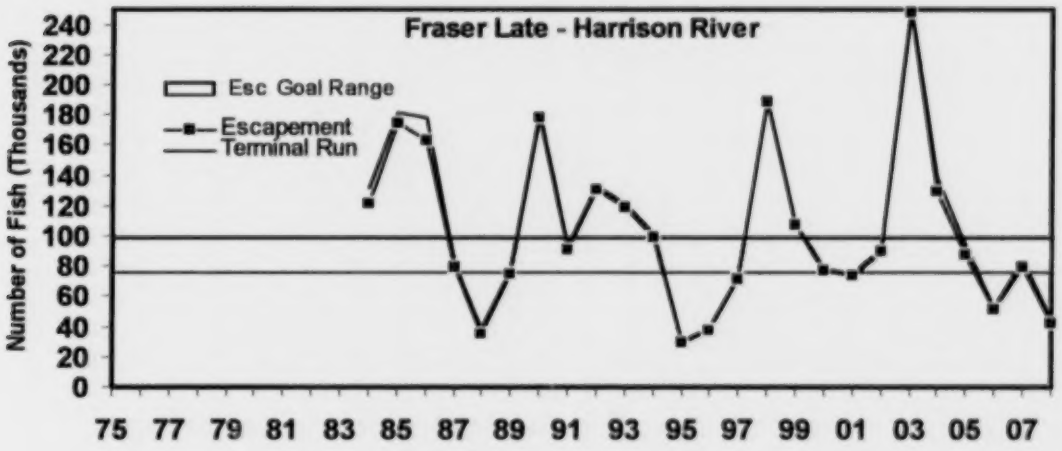


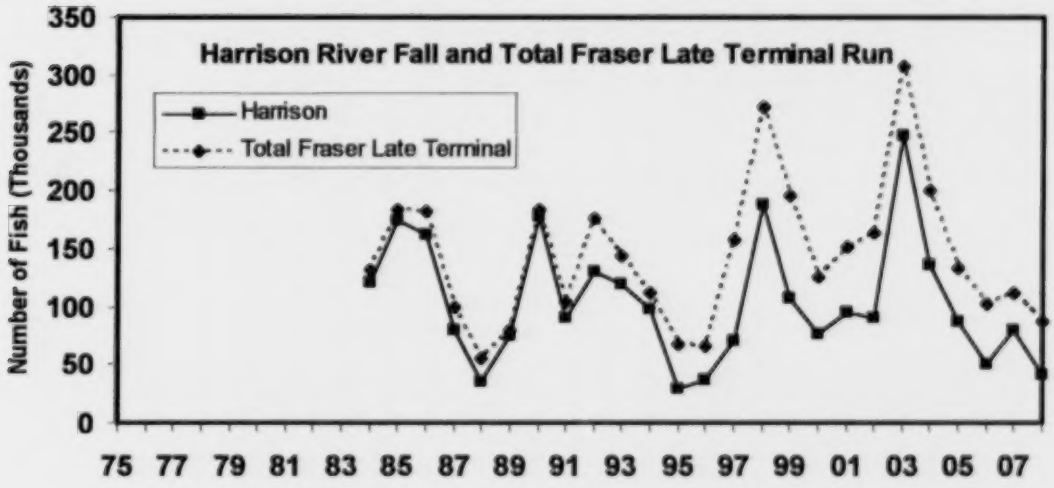
Commentary: The Fraser Summer-Run Age 1.3 stock complex includes 10 populations, spawning in large rivers, mostly below the outlets of large lakes. These include the Nechako River upstream of Prince George, Chilko and Quesnel rivers in the mid Fraser and the Clearwater River in the North Thompson watershed (CTC 2002b). Escapement estimates are generated from visual (mostly aerial) surveys by dividing the peak count by 0.65, except for the Nechako River where multiple aerial counts are analyzed with the AUC method. Escapement surveys of the Stuart River and North Thompson River were discontinued in 2004 due to unreliable counting conditions. Aggregate escapement was estimated at 15,431.



Commentary: The Fraser Summer-Run Age 0.3 aggregate includes six populations of Chinook spawning in the South Thompson watershed upstream of Kamloops Lake and one in the lower Fraser. These include the Middle Shuswap, Lower Shuswap, Lower Adams, Little River and the South Thompson River mainstem in the BC interior, and Maria Slough in the lower Fraser (CTC 2002b). Most escapements are estimated by expanding peak visual survey counts (as in previous

three Fraser aggregates). Further, the lower Shuswap River is a site for calibrating peak count expansion, AUC, and mark-recapture methods. Escapements to the 0.3 Summer Run aggregate were again strong in 2008 and estimated at 106,539 spawners.



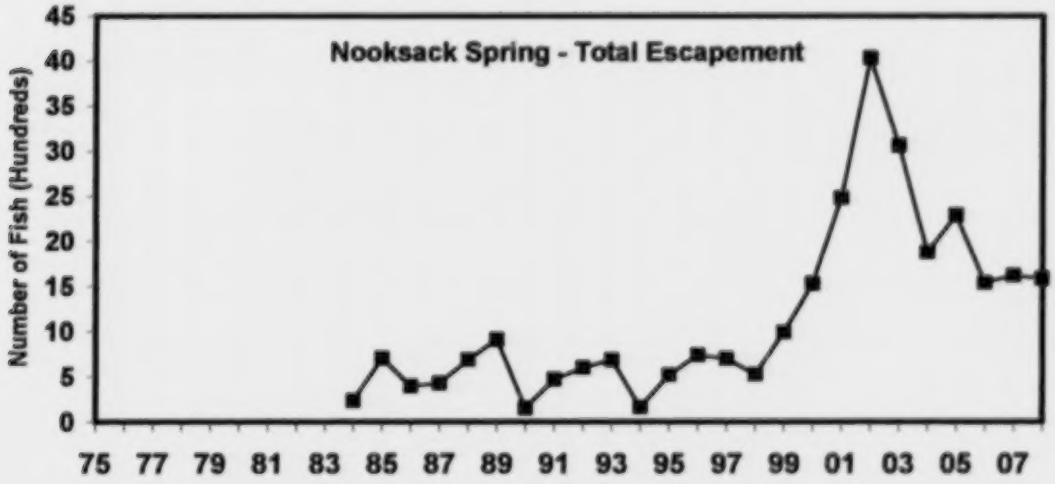


Commentary: The lower Fraser stock is dominated by fall returning Harrison-origin Chinook that includes natural spawners in the Harrison River and Harrison-origin fish introduced to the Chilliwack River. Since 1984, mark-recapture studies have been conducted annually on the Harrison River to obtain reliable estimates of spawning escapements. Estimates of fall Chinook escapement to the Chilliwack River are based on a procedure long established by the Chilliwack Hatchery staff for expanding the number of carcasses counted in standardized reaches of the river. Returns to the Harrison River were estimated to be 41,603 adult Chinook and 870 jacks. Natural spawning escapement to the Chilliwack River was estimated at 35,914 adults and 4,873 jacks. An additional 6,065 adults and 679 jacks returned to the Chilliwack River Hatchery.

2.3.4 Washington, Oregon and Columbia River Stocks

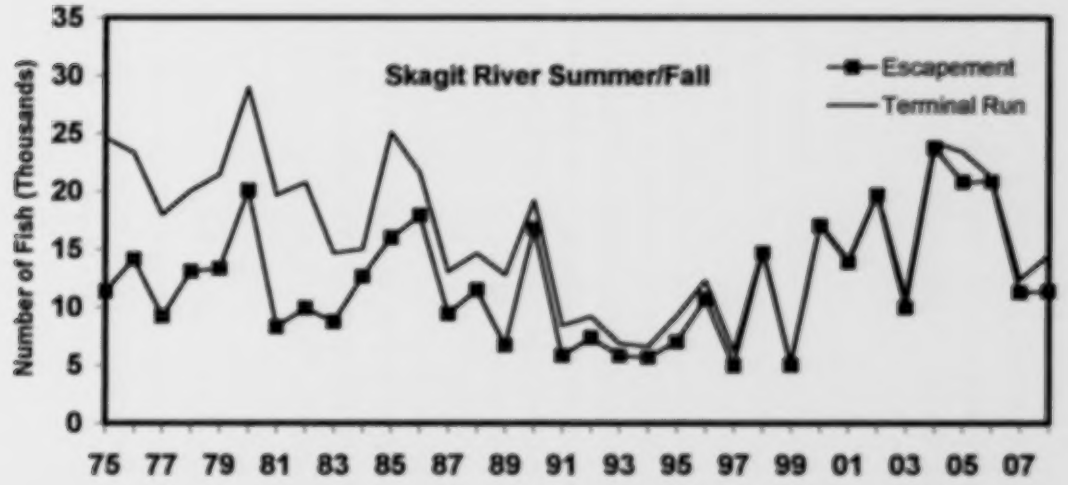
The PSC escapement indicator stocks in Washington, Oregon, and Idaho are separated into five groups: Puget Sound, Washington Coastal, Columbia River, North Oregon Coastal, and Mid Oregon Coastal. The indicator stocks include a variety of run timings and ocean distributions.

Biologically based escapement goals have been reviewed and accepted by the CTC for three fall stocks (Queets, Quillayute, Hoh), two Spring/summer stocks (Queets, Hoh), three Columbia River stocks (Lewis, Upriver Brights and Columbia River summer), and three Oregon coastal stocks (Nehalem, Siletz and Siuslaw).



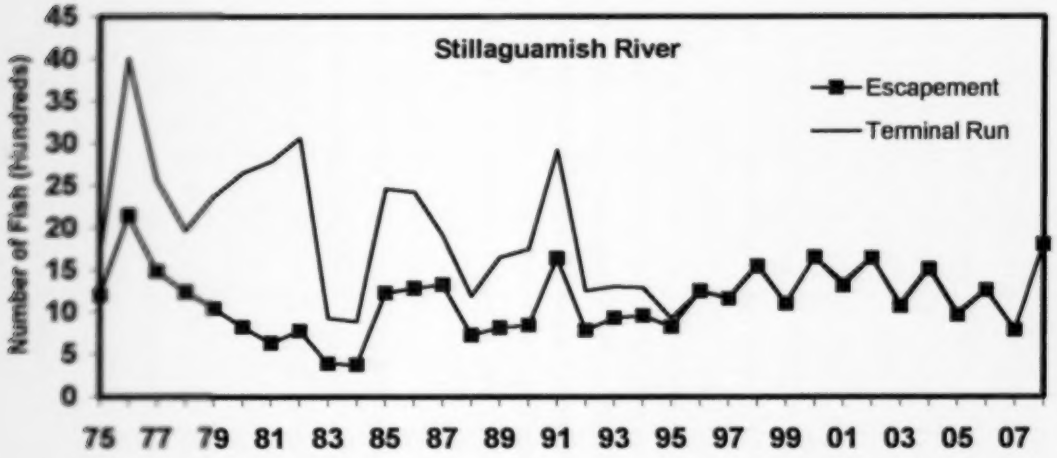
Commentary In 2008, the escapement estimate was 1,266 for the North Fork and 318 for the South Fork. In recent years only 10% of the North Fork escapement has been identified as natural-origin spawners, and the bulk of the run is composed of hatchery-origin returns from the supplementation program. The conservation objective for 2008 was for an Adult Equivalent (AEQ) exploitation rate across all southern U.S. fisheries not to exceed 7% (PFMC 2008). The state-tribal escapement goal established for this stock is 4,000 spawners. There is a small ceremonial and subsistence directed fishery on the spring Chinook and substantial incidental impacts during the terminal fall Chinook fisheries. The preseason ISBM Index for 2008 was 19.3% and was within the PSC General Obligation of 60% (PFMC 2008).

Commentary Due to changes in spawning index areas, beginning in 1992 for the Cascade stock and 1994 for the Sauk and Suiattle stocks, escapements are not directly comparable to previous numbers. The past state-tribal escapement goal of 3,000 adults was the average of the estimated escapements from 1959-1968 (PFMC 1997). In 2008 the Recovery Exploitation Rate (RER) for Skagit springs was 38%, with 576 spawners as the low abundance threshold. The preseason ISBM Index for 2008 was 21.4% and was within the PSC General Obligation of 60% (PFMC 2008). Proposed escapement goals, as stated in the draft Shared Strategy Recovery Plan, are 1,200 Chinook for low marine survival years and 2,100 Chinook for high marine survival years. The 2008 escapement estimate was 1472 natural spawners.

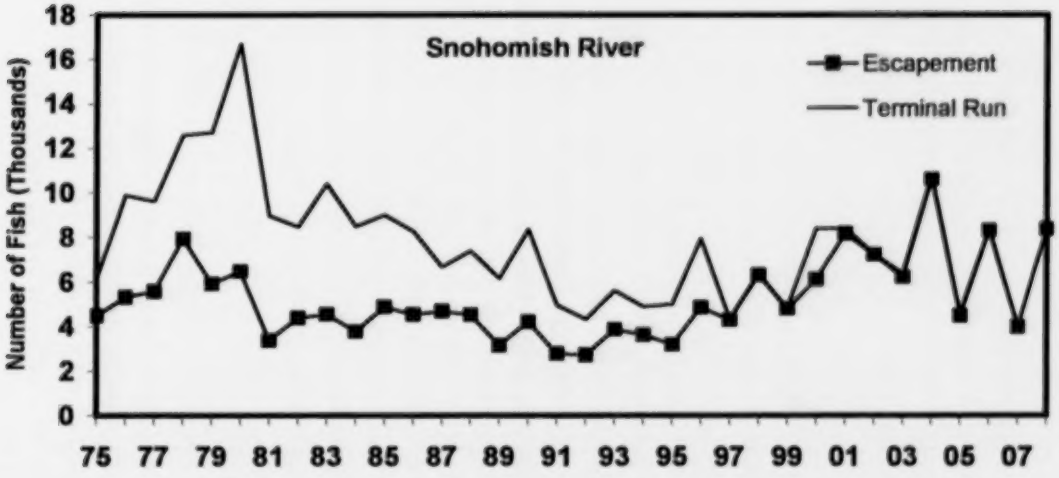


Commentary: Projects to improve escapement estimates of Skagit summer/fall Chinook have recently been funded through the Letter of Agreement (LOA) process. They included: development of variance estimates, determination of age and sex composition of the escapement, and evaluation of the 21-day redd life assumption and 2.5 fish/redd expansion value. The state-tribal escapement goal for this stock is 14,850, the average of the 1965-1976 escapements (Ames

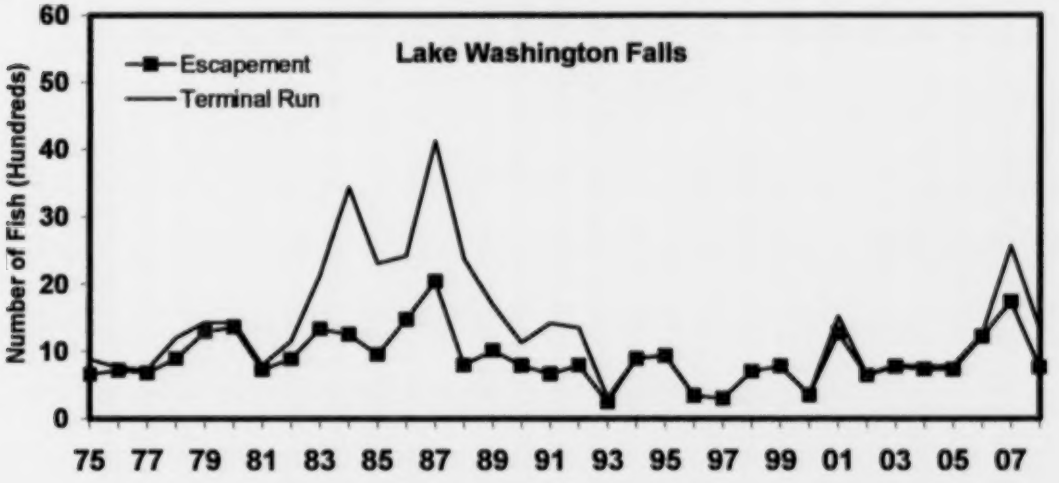
and Phinney 1977). Little terminal harvest has occurred since 1997. In 2008, the Federal Management Plan (FMP) conservation objective for this stock was for an exploitation rate not to exceed 17% in southern U.S. fisheries. The 2008 escapement estimate was 11,351. The terminal run estimate was 14,470. The preseason ISBM Index for 2008 was 32.1% and was within the PSC General Obligation of 60% (PFMC 2008).



Commentary: Natural spawning broodstock are collected annually in the river to maintain a CWT indicator stock program and to augment natural production. From 1989 to 1996, approximately 18% of the escapement was comprised of returns from this program. From1996 to 2005, an average of 38% of the escapement was comprised of hatchery origin returns. The state-tribal escapement goal of 2,000 fish is the average of the 1973-1976 escapements (Ames and Phinney 1977). There have been no terminal harvests since 1996. The 2008 FMP conservation objective for the combined summer/fall stock was for an AEQ exploitation rate not to exceed 15% in the southern U.S. fisheries. The escapement estimate for 2008 was 1,800. The preseason ISBM Index for 2008 was 13.7% and was within the PSC General Obligation of 60% (PFMC 2008).

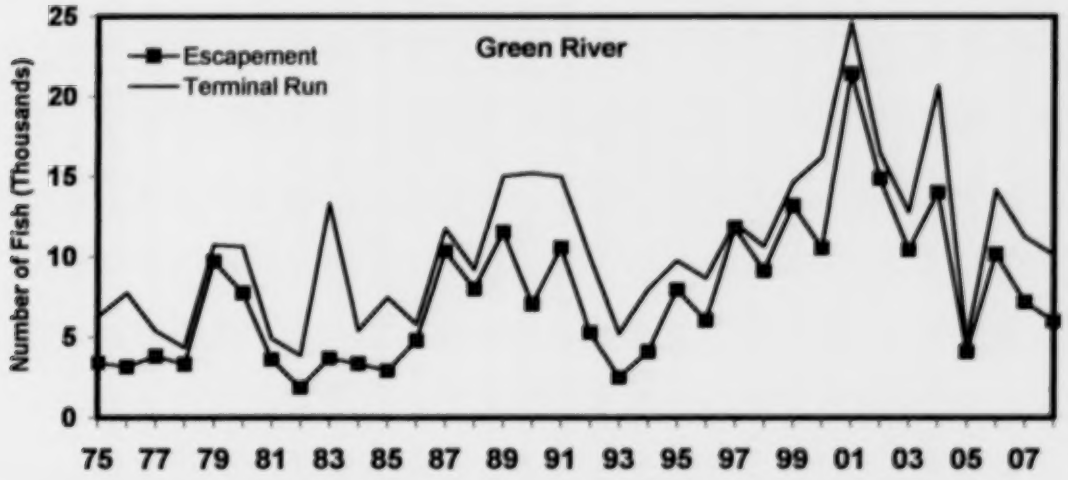


Commentary: Some terminal area harvest of Snohomish River Chinook occurs in Area 8 incidental to net and sport fisheries targeting Tulalip Hatchery Chinook salmon. Historic terminal run size and catch estimates derived from run reconstruction are being revised to reflect the results of otolith marking studies. The state-tribal escapement goal for this stock had been 5,250 fish (the average of the 1965-1976 escapements). The FMP conservation objective was for a total AEQ exploitation rate not to exceed 15% in southern U.S. fisheries. The 2008 escapement was estimated at 8,373 natural spawners. The preseason ISBM Index for 2008 was 16.5% and was within the PSC General Obligation of 60% (PFMC 2008).

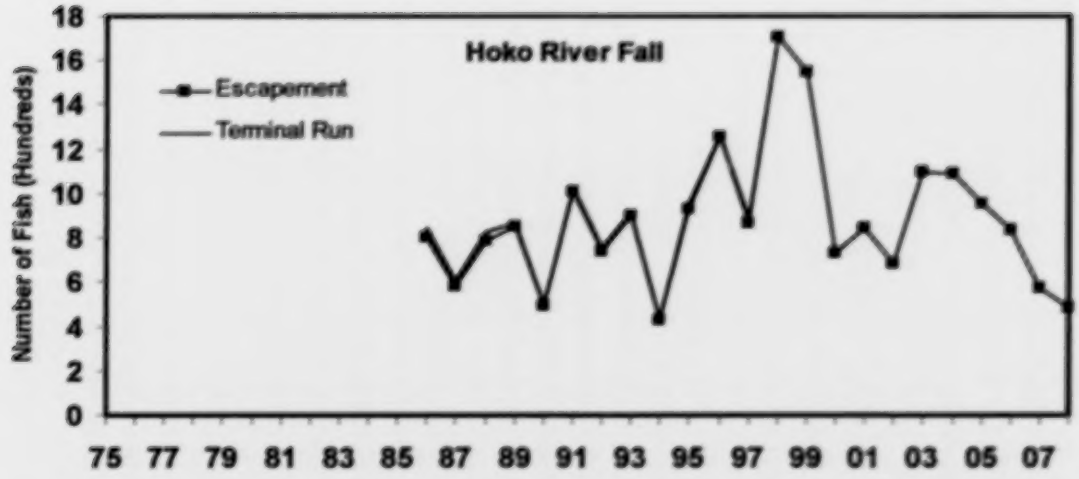


Commentary: Substantial artificial production occurs in Issaquah Creek and at the University of Washington. In 1994, spawning estimates were reviewed, and an attempt was made to find a consistent method to estimate escapement. A state-tribal escapement goal of 1,200 has been established for the Cedar River spawners. The single targeted goal represents an index count for the Cedar River. This objective reflects the average of observed spawning escapements from 1965-1969. It should be noted that although there are no hatchery fish released from the Cedar

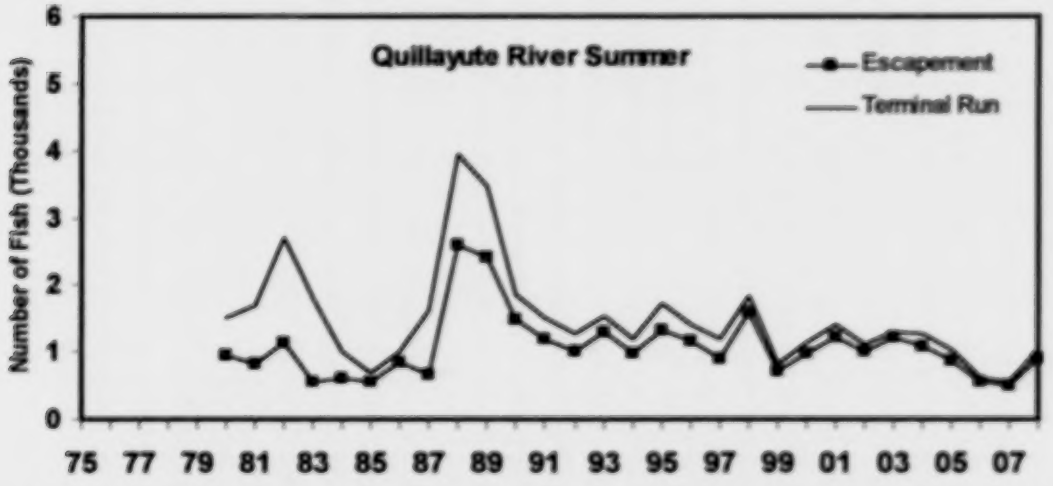
River, nearly 40% of the spawning fish were of hatchery origin. The FMP conservation objective for 2005 for Lake Washington Fall Chinook was for an AEQ exploitation rate not to exceed 15% in all preterminal southern U.S. fisheries. The 2008 escapement was a total of 758 spawners. There have not been freshwater terminal fisheries on this stock since 1995. The preseason ISBM Index for 2008 was 39.2% and was within the PSC General Obligation of 60% (PFMC 2008).



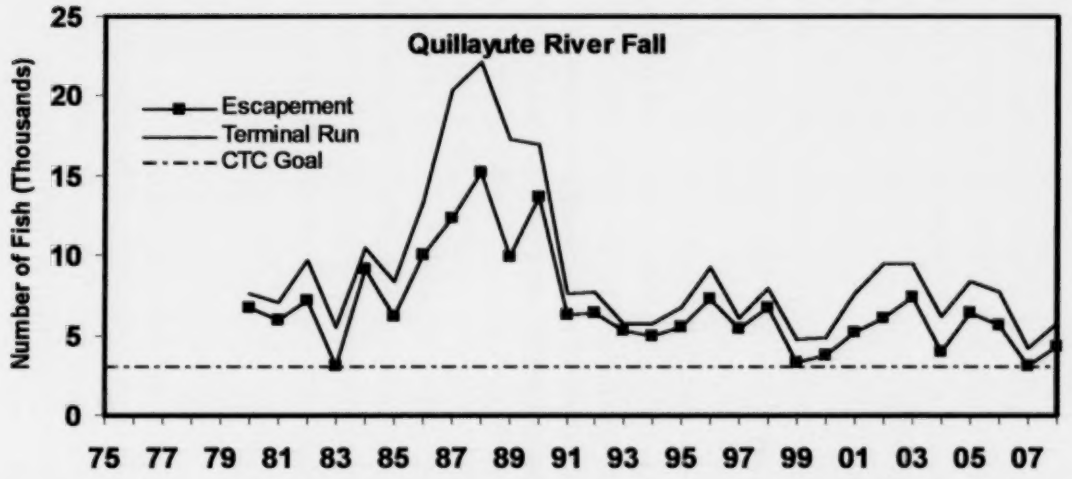
Commentary: There is a large hatchery program in this basin and these fish comprise a large portion of the return. The average is about 52% for the years 1996-2003. Tagging studies were conducted in 1975 and 1976 to estimate numbers of returning adults; results were in close agreement with estimates made from aerial surveys. No attempt is made to adjust the estimate of natural escapement for the presence of hatchery origin fish. Projects to improve escapement estimates of Green River fall Chinook, were recently funded through the LOA process, including evaluation of the spatial and temporal distribution of escapement, alternative methods of estimating escapement, and the validity of the 21-day redd life assumption and 2.5 fish/redd expansion value. The state-tribal escapement goal of 5,750 naturally spawning adults is the average of the 1965-1976 escapements (Ames and Phinney 1977). Beginning in 2003, a new method for estimating natural spawning escapement was employed based on mark/recapture studies conducted 2000-2002. The estimate of mainstem females was compared to the "adjusted" peak count of visible redds for that year, with the assumption that each female dug a single redd. In 2003, the mean ratio of mainstem females to mainstem adjusted peak redds (3.109) from the three study years was applied to the 2007 adjusted peak redd count to estimate mainstem female spawners. A sex ratio of 1.5 males per female was then used to expand the number of female spawners to total mainstem escapement. The 2008 FMP conservation objectives for this stock was for a total AEQ exploitation rate not to exceed 15% in pre-terminal southern U.S. fisheries, and an escapement of at least 5,800 adults. The 2008 escapement estimate for natural spawning Chinook was 5,971. The preseason ISBM Index for 2008 was 38.0% and was within the PSC General Obligation of 60% (PFMC 2008).



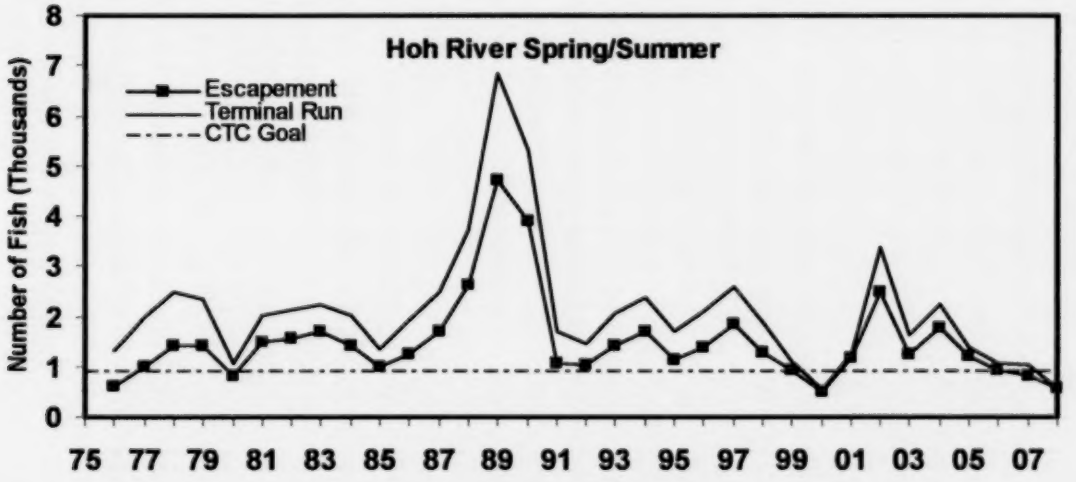
Commentary: There are no directed fisheries on Chinook returning to rivers entering the Strait of Juan de Fuca. The escapement goal established by state and tribal managers is 850 naturally spawning adults. This single targeted goal was developed as a MSY proxy. The escapement goal was calculated by estimating the amount of available spawning habitat, then expanded utilizing assumed optimal redds per mile and fish per redd values (Ames and Phinney 1977). The 2008 escapement estimate was 483.



Commentary: A summer Chinook hatchery program using native stock operated from the mid-1970s to the mid-1980s. Spring Chinook of non-native origin were introduced in a hatchery program in the early 1970s. CWT analyses since then have demonstrated significant straying of these spring Chinook into the summer Chinook spawning population. Estimates from 1991-1995 averaged 47% hatchery origin strays in the naturally spawning population. In 1996, fry plants were eliminated and the smolt plants were reduced. Summer Chinook are managed for a fixed escapement goal of 1,200 adults and jacks combined (PFMC 2003). The 2008 escapement estimate for summer Chinook was 904.

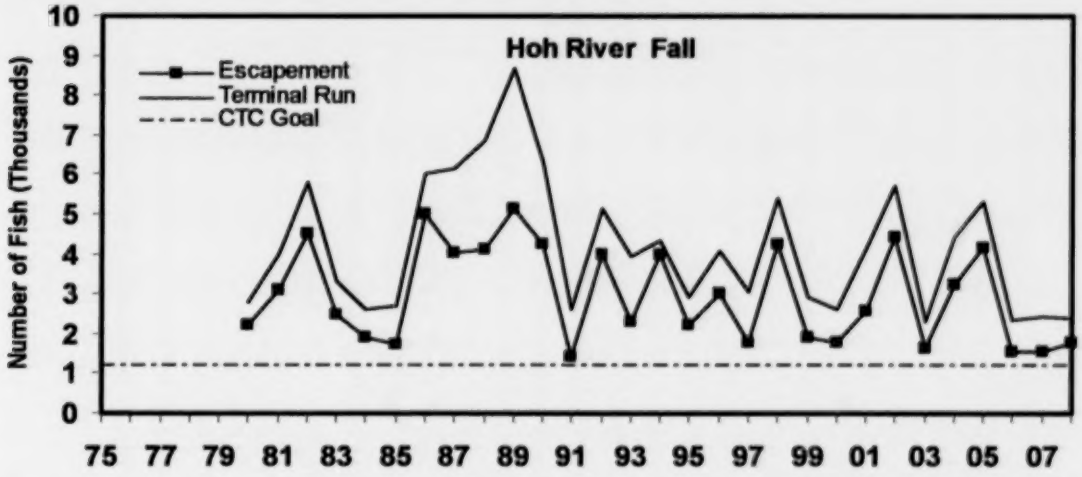


Commentary: No hatchery production of fall Chinook currently occurs in the Quillayute River basin; the program was discontinued in the late 1980s. Since 1991, the returning run size has fluctuated within a range comparable to run sizes observed prior to 1984. The 2008 escapement estimate was 4,306, with a total terminal estimate of 5,727. Terminal fisheries are managed for a harvest rate of 40%, with an escapement floor of 3,000 fish (PFMC 2003). This objective is designed to actively probe at and above estimates of escapements that produce maximum sustained harvest (MSH), while minimizing potential detrimental effects of existing fisheries. Stock production analyses of spawning escapements from 1968-1982 were used to determine the initial escapement floor.

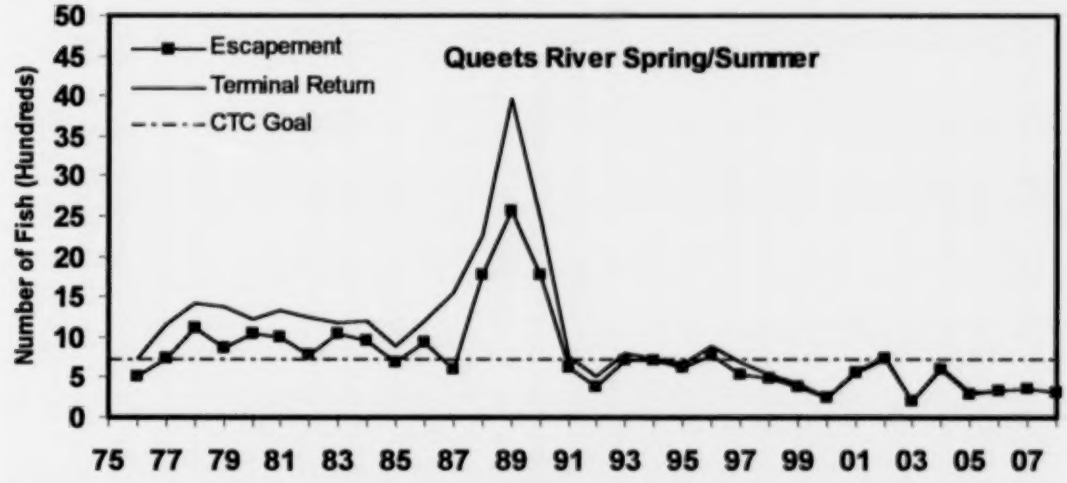


Commentary: Similar to many of the other Washington coastal stocks, Hoh River spring/summer escapements have been relatively stable except for much larger returns in 1988, 1989, and 1990. The terminal return for this stock declined from 1997 to 2000, but has since rebounded. Terminal fisheries are managed to harvest 31% of the river run, with an escapement floor of 900 fish (PFMC 2003). This objective is designed to allow a wide range of spawner escapements from which to eventually develop an MSY objective or proxy while protecting the

long-term productivity of the stock. Stock production analysis of spawning escapement for brood years 1969-1976 was utilized to determine the initial escapement floor. The 2008 escapement estimate and total run size were 550 and 582 respectively.

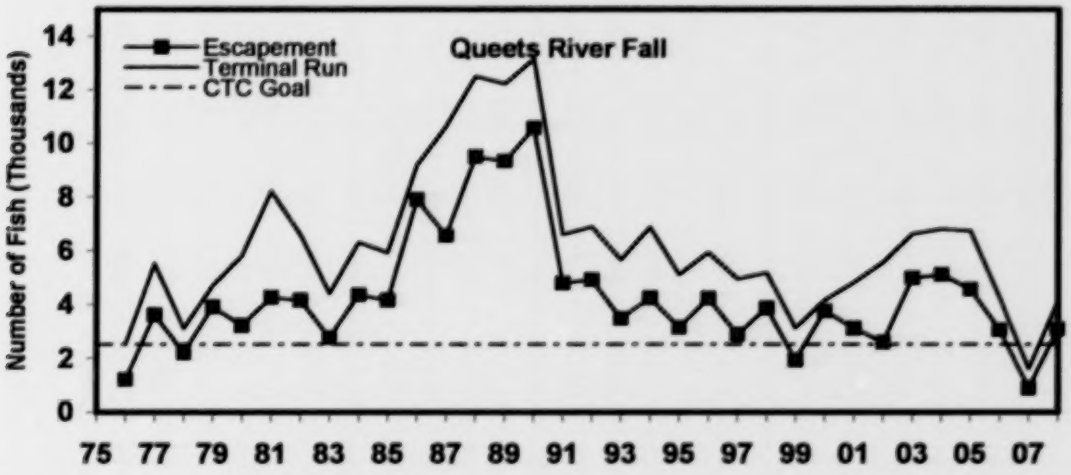


Commentary: The natural escapement estimates for the Hoh River fall Chinook include fish taken for broodstock in the 1980s. This stock is managed to harvest 40% of the terminal run, with an escapement floor of 1,200 spawners (PFMC 2003). This objective is designed to actively probe at and above estimates of the escapements that produce MSH, while minimizing potential detrimental effects of existing fisheries. Stock production analyses of spawning escapements from 1968-1982 were utilized to determine the initial escapement floor. The 2008 escapement estimate was 1,774. Terminal run size estimate was 2,408.

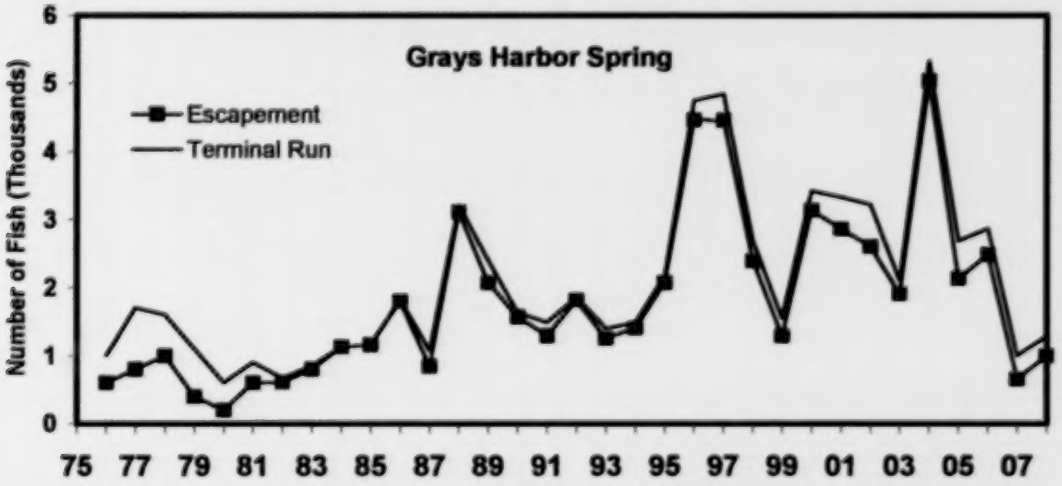


Commentary: Terminal fisheries are managed to harvest 30% of the river run size, with an escapement floor of 700 fish (PFMC 2003). This objective is designed to actively probe at and above the estimates of escapement that produce MSH. Since 1990, terminal fisheries have had minimal impact on this stock as returns to the river have rarely exceeded the escapement floor in this time frame. Since 2000, sport anglers have been required to release all Chinook during the

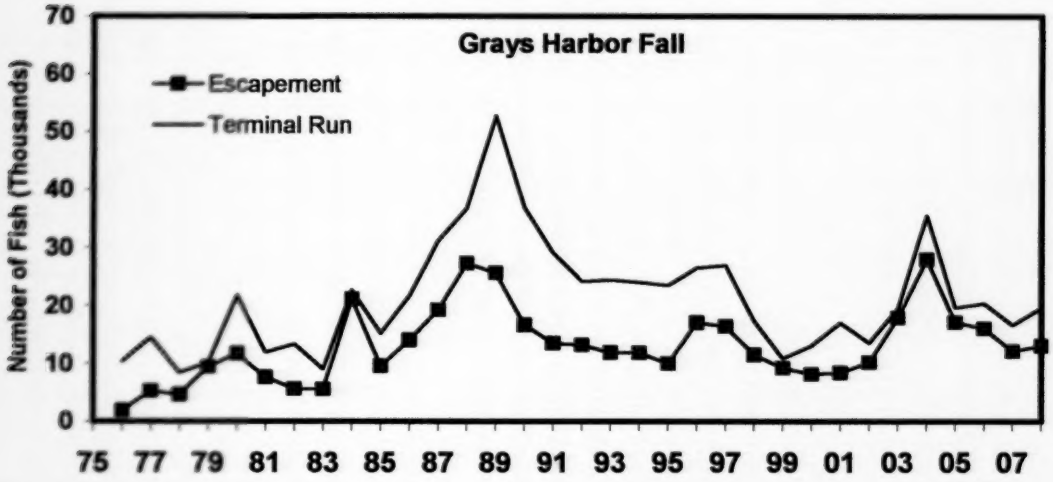
summer, and tribal fisheries have been limited to one tribal netting day for ceremonial and subsistence purposes. Stock production analysis of spawning escapement for brood years 1969-1976 were used to determine the initial escapement floor. The 2008 escapement estimate was 305, with a terminal run size of 305.



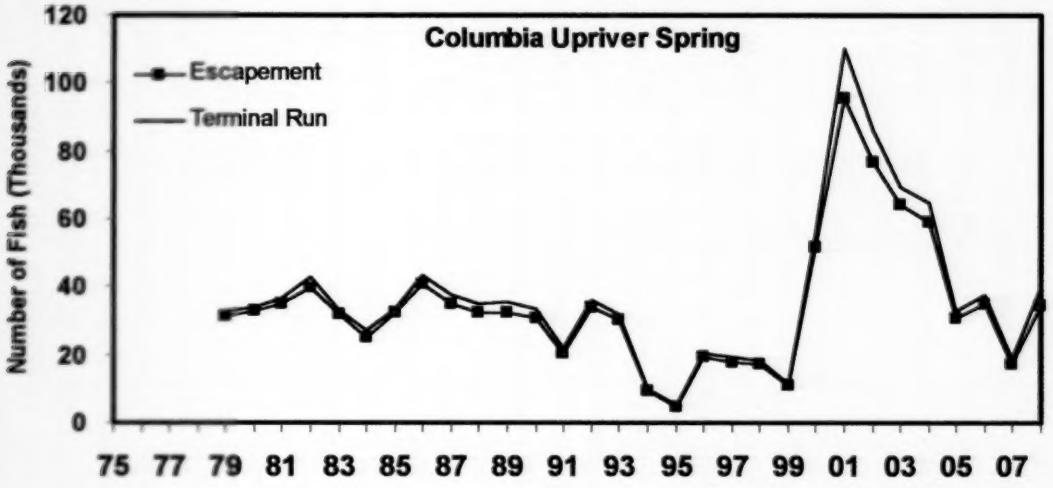
Commentary: For Queets River fall Chinook, the 2008 escapement was 3,082 and the terminal run was 4,104. Terminal fisheries are managed to harvest 40% of the river return, with an escapement floor of 2,500 spawners (PFMC 2003). This objective is designed to actively probe at and above estimates of the escapements that produce MSH. Stock production analyses of spawning escapements from 1967-1982 were used to determine the initial escapement floor.



Commentary: The Grays Harbor spring Chinook stock is managed for a fixed natural spawning escapement goal of 1,400 fish (PFMC 2003). This single targeted goal was developed as a MSY proxy. This objective was derived from actual spawning data from the mid- to late 1970s, expanded to include additional habitat not covered by spawner surveys. The 2008 escapement was 996 Chinook and the 2008 terminal run 1281.

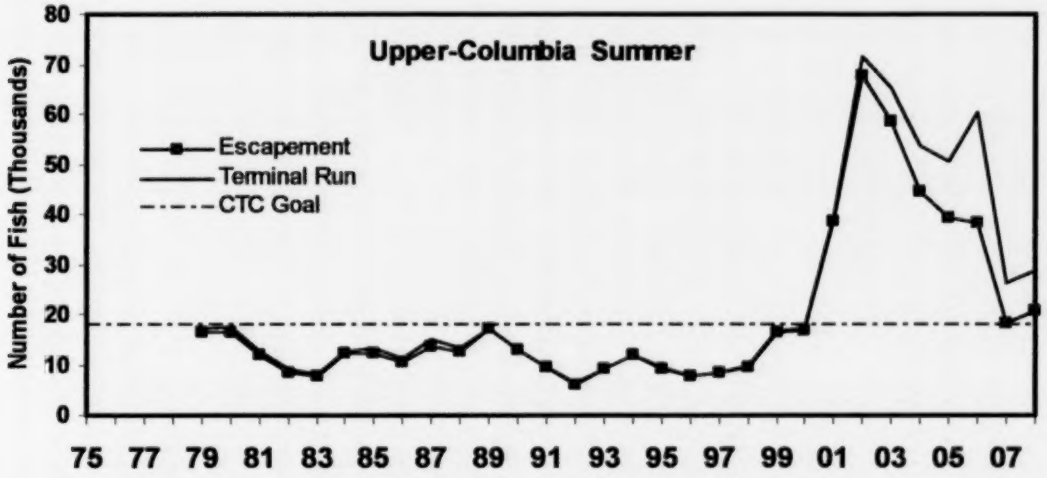


Commentary: Grays Harbor fall Chinook are managed for a maximum sustained production escapement goal of 14,600 spawners for the Chehalis and Humptulips systems combined (PFMC 2003). This single targeted goal was developed as an MSY proxy. The objective represents assumed optimal spawner density based on estimated available habitat. The 2008 escapement was 13,012 Chinook. The terminal run was 19,511 Chinook salmon.

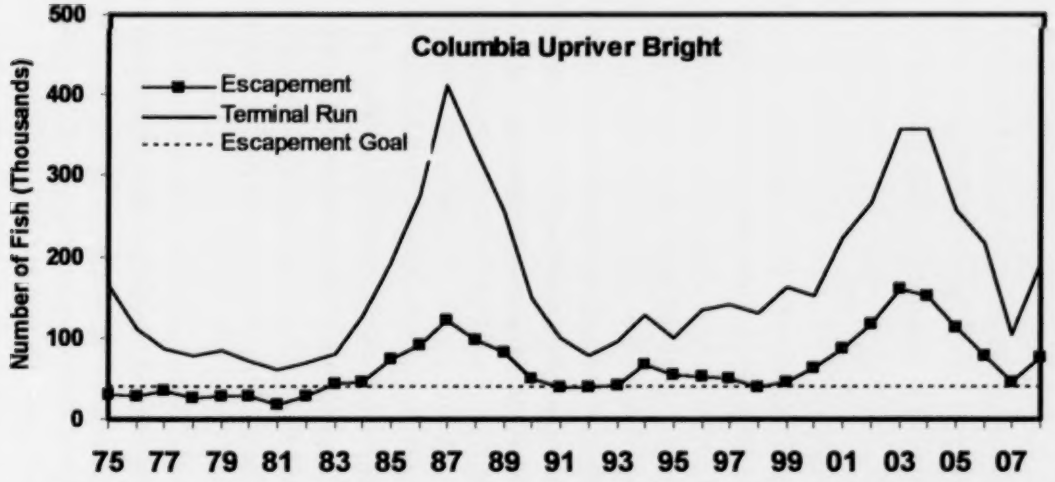


Commentary: The upriver spring/Snake River summer Chinook escapement in the graph was calculated as the dam count at Bonneville Dam from March 15 through June 15 multiplied by the proportion of wild spawners estimated from run reconstruction, minus an estimate of wild harvest above Bonneville Dam. In 1992, Snake River spring/summer naturally spawning Chinook were listed under the ESA. The interim management goal for the Columbia River Fish Management Plan (CRFMP 1988) for Columbia River Springs was 115,000 hatchery and wild adult Chinook counted at Bonneville Dam and 25,000 naturally produced plus 10,000 hatchery produced adults counted at Lower Granite Dam. However, the CRFMP is currently being renegotiated. Terminal harvests were severely constrained from 1977 until 2000, with incidental harvests in lower river fisheries averaging 2% and total harvest in treaty Indian fisheries

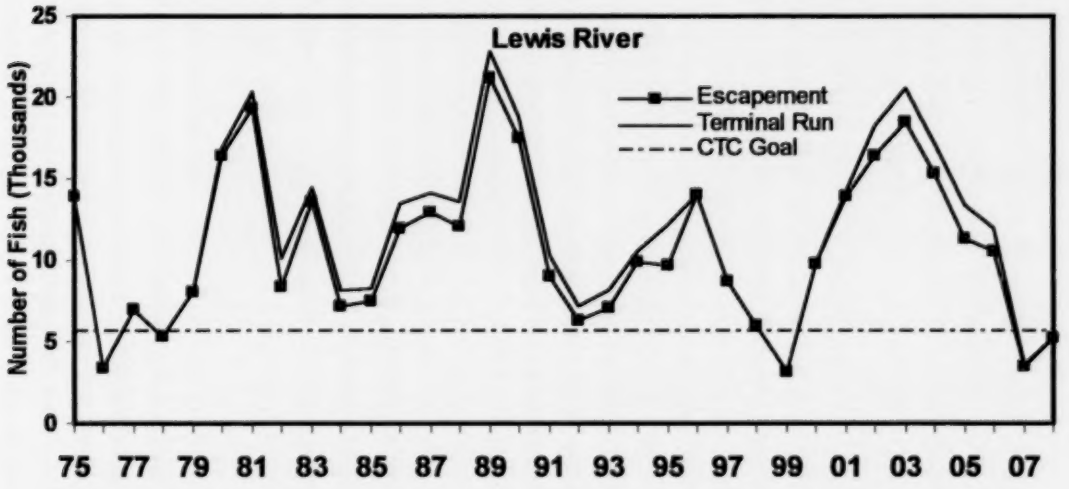
averaging 5.5% (TAC 1999). Since 2001, the terminal harvest rates have been between 13.5% and 19.0%. In 2008, the escapement for Columbia Upriver Springs was 34,253 and terminal run of 39,616.



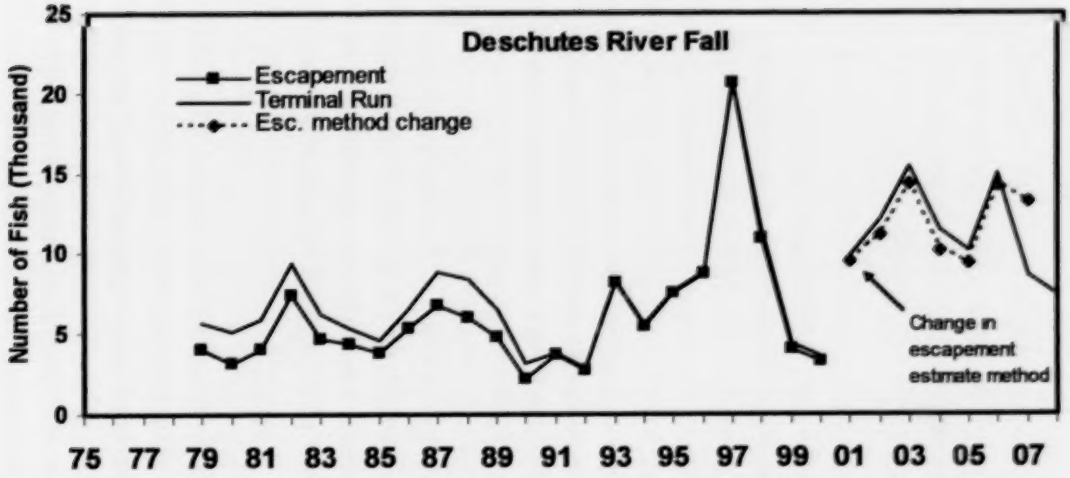
Commentary: Productivity of Upper Columbia River Chinook salmon is limited by loss of downstream migrants, habitat degradation, lack of screens on water diversions, high water temperatures, low flows, and sediment-laden irrigation water returns (CBFWA 1990). The CTC (1999) developed an interim biologically based MSY escapement goal of 17,857 wild upper-Columbia summer Chinook past Bonneville Dam based on PSC Chinook model data. The methods used to reconstruct the escapements for developing the goals are different than the current methods used to estimate upper-Columbia escapements, graphed above. Also, the historical time series of escapement estimates in the TAC run reconstruction have changed. A revised goal using the current escapement data will be reviewed by the CTC in 2008. The 2008 escapement was 20,786 naturally spawning fish. Directed commercial fisheries for upper Columbia River summer Chinook resumed in 2003 above Bonneville Dam and in 2004 below Bonneville Dam because the Columbia Upriver Summers exceeded the interim management goal of 29,000 hatchery and natural origin adults as measured at the Columbia River mouth



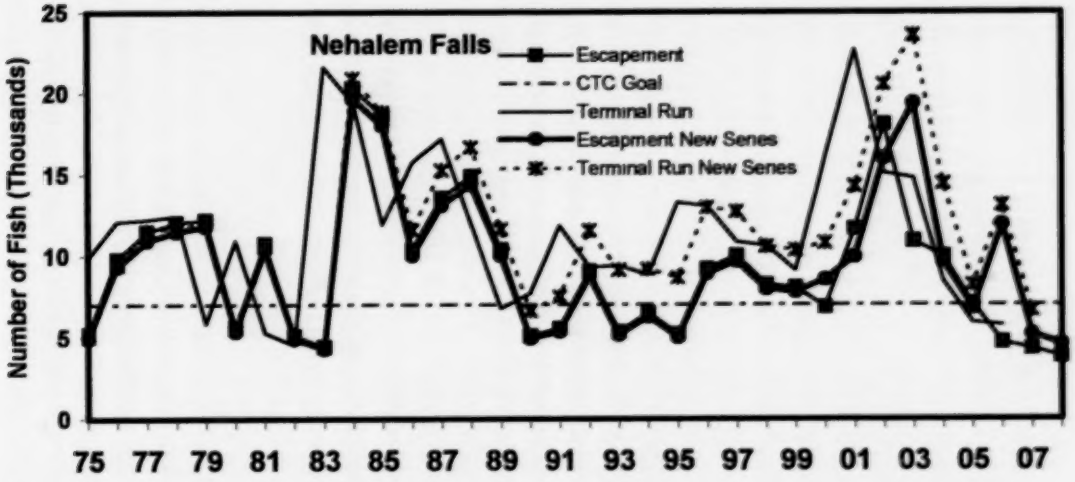
Commentary: The escapement goal for the Columbia River Upriver Bright Chinook is 40,000 naturally spawning fish past McNary dam. The 2002, 2003, and 2004 escapements past McNary dam of 116,237, 160,677, and 150,440 were the largest since the peak escapement and terminal run in 1987. The 2008 escapement was 76,599 through McNary Dam.



Commentary: The escapement goal for the Lewis River is 5,700 naturally spawning fish. Except in 1999, escapements have been above the goal since 1979. The 2002, 2003, and 2004 returns and escapements of Lewis River fall Chinook were the largest since 1990. The estimated escapement in 2008 was 5,200 Chinook, the second time since 1999 that the escapement has been below goal.



Commentary: Local management agencies use a goal of 4,000 adult Chinook, which includes 2,000 fish above Sherars Falls. This goal is based on average spawning escapement. The 2002 and 2003 escapements of Deschutes fall Chinook were at least 3 times the management goal, based on either the expansion of escapements above Sherars Falls, or the total river mark recapture estimate. They were also the largest escapements since the peak in 1997. The estimated escapement in 2008 was 6,980 Chinook.



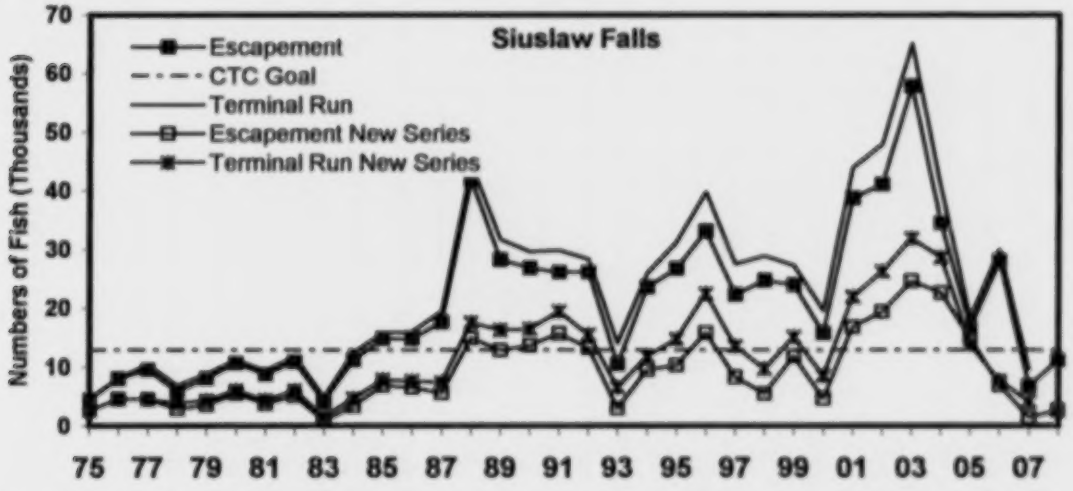
Commentary: Methods used to generate escapement estimates are derived from calibration studies funded through the USCTC-LOA studies conducted in the Nehalem River basin from 2000-2004. The results of these studies indicate that peak counts from "standard" spawner surveys track the true Chinook escapement into the basin relatively well. Standard surveys are defined as those surveys which have historically been conducted by regional staff for 20+ years. Peak count is defined as the largest sum of live Chinook and carcasses observed on a particular day, per mile over a defined survey reach. The Chinook Technical Committee requires that a

Coefficient of Variation (CV) of <30% must be achieved in order for an index be used as an estimator of abundance within the Chinook management scheme.

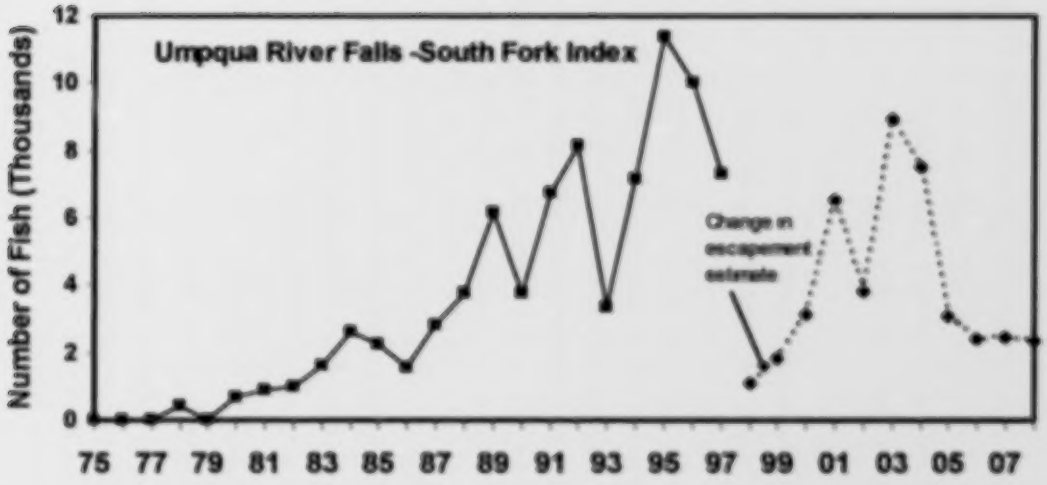
The index for this assessment is .00528 with a CV of 31%. The spawner escapement estimate for the Nehalem Basin (excluding the North Fork) based on this index value was 4,596 fall Chinook. Punch card data used to estimate the recreational sport catch are unavailable for 2008; hence terminal run sizes are not available for this year. Methods directly comparable to those used to generate the agreed to escapement goal for the Nehalem indicate 2008 escapement of 3,810 adult spawners. This is 55% of the current escapement goal. This is the third consecutive year of this stock's failure to meet agreed-to escapement goals. The Oregon Department of Fish and Wildlife is anticipating being under escapement goal based on forecasts of recruitment for this stock in 2009. Forecasted escapement based on sibling regression methods predicts 2009 escapement of 2,321 spawning adults. Consequently, the department is structuring terminal fisheries in 2009 with the intent to meet its general obligation under the ISBM agreement.

Commentary: Calibration studies continue through the 2008 spawning year thus traditional methods of escapement estimation remain in place until the Mark-Recapture calibration study is complete. Methods used to generate escapement estimates in this basin in relation to the established escapement goal have not changed since the 2005 report. The estimate based upon historically produced habitat expansion for 2008 was 1,202 adult fall Chinook salmon. This is one of the lowest estimates of spawning adults returning to the Siletz since the beginning of a dataset going back to 1975. Punch card data used to estimate the recreational sport catch are not yet available for 2008; hence terminal run size estimates from this method are not available for this year. This escapement estimate is substantially below the basin's escapement goal, and the forecast based on sibling regression methods (1,723 adult spawners) for the coming escapement year does not indicate an anticipated improvement in escapement in the 2009 return year. Consequently, the ODFW anticipates being under ISBM general obligation, and is currently structuring terminal fisheries with the intent to comply with needed reductions in terminal catch not only in this basin and the other escapement indicator stocks in the NOC aggregate, but on a coast-wide basis. These actions have been presented to the Oregon Fish and Wildlife Commission for review and are anticipated to take effect upon approval prior to the beginning of the terminal fall fishing season. Alternate estimates of escapement generated by the ongoing

Mark-Recapture study funded through the auspices of the 1996 LOA agreement indicate 1,203 spawning adults, and a terminal sport fishing harvest of 353 fish in 2008.



Commentary: The estimated spawner abundance in 2008 was 2,617 adult Chinook. Methods used to generate escapement estimates in this basin are based on five years (2002-2006) of calibrated peak counts on six standard surveys to mark & recapture estimates in the Siuslaw basin. The index value is 0.01054 with a SD of 16%. Escapement goal estimate analysis was based upon available habitat expansion estimates used in other basins on the Oregon coast which have been obviated through the improvement of estimation techniques based upon Mark-Recapture estimates. Escapement estimates based on these methods indicated escapement below the CTC adopted escapement goal of 12,925 for the past three years (6,965 in 2006, 1,491 in 2007, 2,617 in 2008) however these estimates are not comparable to the currently agreed to escapement goal. Escapement estimates based on methods used to generate the agreed to goal result in an estimated 11,119 adult spawners. Spawner-recruit analysis utilizing the updated data set is planned for the near future to compare between newer escapement estimation (backcast through historical data-sets) and an escapement goal based upon the same data. Punch card data used to estimate the recreational sport catch are not yet available for 2008; hence terminal run size estimates from this method are not available for this year. As with the remainder of the aggregate, management measures are being taken to reduce the terminal catch in the Siuslaw to provide for greater escapement to the spawning grounds for the 2009 return year.



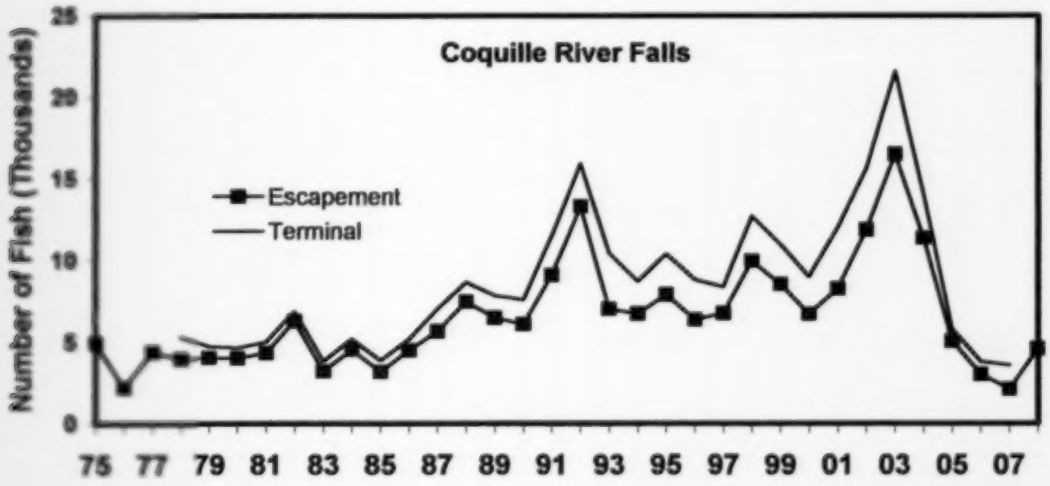
Commentary: Coded-wire tagged fall-run Chinook from the Umpqua River have indicated that they are harvested in PSC fisheries. Four years of USCTC funded research has allowed the calibration of the redd counts to derive a fish per redd expansion factor so that annual escapements estimates can be made. The average expansion factor from these studies is 3.69 fish per redd. The coefficient of variation of the expansion factor was found to be 14%, which shows that the average expansion factor is a reliable statistic to use for annual estimates of escapement. The escapement estimate for 2008 was 2,333 based on redd count expansions.

Indexes of Chinook spawner abundance in the South Umpqua/Cow creek sub-basin were derived from aerial redd count surveys. The aerial surveys are funded by Douglas County and were conducted twice during the spawning season. Aerial redd counts were conducted on the lower 69 miles of the South Umpqua and the lower 60 miles on Cow Creek. These counts cover all mainstem spawning areas for fall Chinook in the South Umpqua Basin. The South Umpqua is broken up into three reaches (Forks to Happy Valley, Happy Valley to Cow Creek, Cow Creek to Milo) and Cow Creek is considered one reach from the confluence with the Umpqua River to Galesville Dam.

The Coastal Chinook Research and Monitoring project was able to provide a calibration of redds to spawner escapement estimate based on the years 1998 through 2003 excluding 2002 when aerial flights were not conducted. The mean number of fish per redd estimated from these five years was 3.4 with a coefficient of variation of 17.8%

Aerial surveys are conducted using a Bell Ranger 3 helicopter and flights are typically scheduled to encompass the peak spawning period. Two biologists simultaneously count redds for each reach using hand tally-counters. At the end of the reach, each biologists will record the number of redds identified, and counters reset for the next reach. The average of the two observers Chinook redd count from reach will be determined for both flights. The index is defined as the sum of the peak counts for each reach between the two flights. Expansions are sometimes made to account for portions of reaches that were not completed due to visibility or mechanical problems.

Terminal run estimation is currently being conducted and will require some measure of data mining in order to reconstruct what the terminal catch has been historically. Preliminary indications are that the terminal catch of South Fork Umpqua Chinook is insubstantial.



Commentary: Methods of estimation based on Mark-Recapture calibrated analysis indicate an adult Chinook escapement for the Coquille basin of 4,562 spawners. Habitat-expansion based estimates indicate an escapement of 5,803 adult fish. Analysis funded by the CTC is underway that will provide information to designate Coquille Fall Chinook as an escapement indicator stock for the Mid-Oregon Coast (MOC) Aggregate. Calibrated index of peak counts on standard surveys to a relatively precise mark & and recapture abundance estimates has been selected as an efficient and cost effective means to measure spawner escapement of Chinook salmon for use in PST fisheries management.

The Chinook Technical Committee requires that a Coefficient of Variation (CV) of <30% must be achieved in order for an index be used as an estimator of abundance within the Chinook management scheme. The CV between the qualifying calibration values computed from studies conducted from 2001 through 2004 for the Coquille River basin is 14%, and the average index value of 0.00874. This analysis include eight standard survey conducted annually on a regular basis. The calibration value is defined as the average peak count per mile of the eight standard surveys divided by the point value of the Petersen estimate. Peak count is defined as the largest sum of live Chinook and carcasses observed on a particular day, per mile over a defined survey reach.

REFERENCES CITED

Ames, J. and D. E. Phinney. 1977. 1977 Puget Sound summer-fall Chinook methodology: escapement estimates and goals, run size forecasts, and in-season run size updates. Washington Department of Fisheries Technical Report 29. Olympia, Washington.

CBFWA (Columbia Basin Fish and Wildlife Authority). 1990. Integrated system plan for salmon and steelhead production in the Columbia River basin. Portland, Oregon.

CCMP (Comprehensive Chinook Management Plan). 2004. Comprehensive Chinook management plan for Puget Sound Chinook: harvest management component. Northwest Indian Fisheries Commission. Olympia, Washington.

CRFMP. 1988. Columbia River Fisheries Management Plan.

CTC (Chinook Technical Committee).1997. Incidental fishery mortality of Chinook salmon: Mortality rates applicable to Pacific Salmon Commission Fisheries Report TCCHINOOK (97)-1. Vancouver, British Columbia.

CTC (Chinook Technical Committee). 1999. Maximum sustained yield or biologically based escapement goals for selected Chinook salmon stocks used by the Pacific Salmon Commission's Chinook Technical Committee for escapement assessment. Pacific Salmon Commission, Report TCCHINOOK (99)-3. Vancouver, British Columbia.

CTC (Chinook Technical Committee). 2002. Catch and escapement of Chinook salmon under Pacific Salmon Commission jurisdiction 2001. Pacific Salmon Commission, Report TCCHINOOK (02)-1. Vancouver, British Columbia.

CTC (Chinook Technical Committee). 2004a. Annual exploitation rate analysis and model calibration. Pacific Salmon Commission, Report TCCHINOOK (04)-4. Vancouver, British Columbia.

CTC (Chinook Technical Committee) 2004b. Standardized fishery regimes for Southeast Alaska Chinook fisheries. Pacific Salmon Commission, Report TCCHINOOK (04)-3. Vancouver, British Columbia.

CTC (Chinook Technical Committee). 2004c. Estimation and application of incidental fishing mortality in Chinook salmon management under the 1999 Agreement of the Pacific Salmon Treaty. Pacific Salmon Commission, Report TTCHINOOK (04)-1. Vancouver, British Columbia.

CTC (Chinook Technical Committee). 2005a. Catch and escapement of Chinook salmon under Pacific Salmon Commission jurisdiction, 2003. Pacific Salmon Commission, Report TCCHINOOK (05)-2. Vancouver, British Columbia.

Ericksen, R. P. and S. A. McPherson. 2003. Biological escapement goal for Chilkat River Chinook salmon. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Manuscript 03-01, Juneau.

Farwell, M. K., R. E. Bailey, and B. Rosenberger. 1999. Enumeration of the 1995 Nicola River Chinook salmon escapement. Canadian Manuscript Report Fisheries and Aquatic Science 2491:44p.

Freeman, G.M., S. A. McPherson and D.L. Magnus. 2001. A mark-recapture experiment to estimate the escapement of Chinook salmon in the Keta River, 2000. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series 01-19, Anchorage, Alaska.

McPherson, S. A., D. R. Bernard, and J. H. Clark. 2000. Optimal production of Chinook salmon from the Taku River. Alaska Department of Fish and Game, Sport Fish Division, Fishery Manuscript 00-2. Anchorage, Alaska.

McPherson, S. A. and J. H. Clark. 2001. Biological escapement goal for King Salmon River Chinook salmon. Alaska Department of Fish and Game, Regional Information Report 1J01-40. Anchorage, Alaska.

Pahlke, K. A. 2003. Escapements of Chinook salmon in Southeast Alaska and transboundary rivers in 2001. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series 03-11, Anchorage, Alaska.

Pahlke, K. A., and P. Etherton. 1999. Chinook salmon research on the Stikine River, 1997. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series No. 99-6, Anchorage, Alaska.

PFMC (Pacific Fishery Management Council). 2003. Review of 2002 Ocean Salmon Fisheries. Pacific Fishery Management Council. Portland, Oregon.

PFMC (Pacific Fishery Management Council). 2005. Preseason Report III: Analyses of Council Adopted Management Measures for 2000 Ocean Fisheries. Pacific Fishery Management Council. Portland, Oregon.

TAC (U.S. v Oregon Technical Advisory Committee). 1999. All Species Review: Columbia River Fish Management Plan.

Weller, Jan L. and Scott A. McPherson. 2003. A mark-recapture experiment to estimate the escapement of Chinook salmon in the Unuk River, 2002. Alaska Department of Fish and Game, Fishery Data

APPENDICES

Appendix A. Landed Chinook catches by region and gear from 1975-2008.

Appendix A.1. Southeast Alaska (SEAK) Chinook catches.

Year	Southeast Alaska						
	Troll	Net	Sport	Total	Add-on	Terminal Exclusion	Treaty Catch
1975	287,342	13,365	17,000	317,707	-	-	-
1976	231,239	10,523	17,000	258,762	-	-	-
1977	271,735	13,443	17,000	302,178	-	-	-
1978	375,919	25,492	17,000	418,411	-	-	-
1979	337,672	28,388	16,581	382,641	-	-	-
1980	303,643	20,114	20,213	343,970	-	-	-
1981	248,782	18,952	21,300	289,034	-	-	-
1982	241,938	46,992	25,756	314,686	-	-	-
1983	269,821	19,516	22,321	311,658	-	-	-
1984	235,622	32,405	22,050	290,077	-	-	-
1985	215,811	33,870	24,858	274,539	6,246	-	268,293
1986	237,703	22,099	22,551	282,353	11,091	-	271,262
1987	242,562	15,532	24,324	282,418	17,095	-	265,323
1988	231,364	21,788	26,160	279,312	22,525	-	256,787
1989	235,716	24,245	31,071	291,032	21,510	-	269,522
1990	287,939	27,712	51,218	366,869	45,873	-	320,996
1991	264,106	34,864	60,492	359,462	61,476	-	297,986
1992	183,759	32,140	42,892	258,791	36,811	-	221,980
1993	226,866	27,991	49,246	304,103	32,910	-	271,193
1994	186,331	35,654	42,365	264,350	29,185	-	235,165
1995	138,117	47,955	49,667	235,739	58,800	-	176,939
1996	141,452	37,298	57,509	236,259	72,599	8,663	154,997
1997	246,409	25,069	71,524	343,002	46,463	9,843	286,696
1998	192,066	23,514	55,013	270,593	25,021	2,420	243,152
1999	146,219	32,720	72,081	251,020	47,725	4,453	198,842
2000	158,717	41,400	63,173	263,290	74,316	2,481	186,493
2001	153,280	40,163	72,291	265,734	77,287	1,528	186,919
2002	325,308	31,689	69,537	426,534	68,164	1,237	357,133
2003	330,692	39,374	69,370	439,436	57,470	2,446	379,519
2004	354,658	64,038	80,572	499,268	75,955	6,295 1,647	417,019[1] 421,666
2005	338,411	71,618	86,575	496,604	65,843	40,280	390,482
2006	282,315	70,384	85,794	438,493	49,354	31,462	357,678
2007	268,149	55,884	82,848	406,881	70,187	10,081	326,613
2008	151,926	46,149	38,371[2]	236,446[2]	65,536[2]	7,226[2]	163,685[2]

Troll, net, sport and total catches include catch of SEAK hatchery-origin fish; catches that count towards the all-gear ceiling (with hatchery add-on subtracted) are shown in the "treaty catch" column.

"-" = not applicable.

[1] The value on top excludes District 108 Stikine catch above base levels. The value below includes it.

[2]These values are preliminary.

Appendix A.2. Northern British Columbia (NBC) Chinook catches.

Year	Northern British Columbia						
			Tidal Sport				
	Area 1-5 Troll [1]	Area 1-5 Net	Areas 1,2E, 2W	Areas 3-5	Area 1-5 Freshwater Sport	Area 1-5 First Nations	Total
1975	228,121	25,095	NA	NA	NA	4,055	257,271
1976	190,267	16,105	NA	NA	NA	2,791	209,163
1977	130,899	44,196	106	1,670	2,158	6,998	186,027
1978	146,054	27,924	125	1,668	6,610	5,363	187,744
1979	147,576	40,640	0	2,523	1,960	5,266	197,965
1980	157,198	26,895	200	3,867	4,515	10,121	202,796
1981	153,065	41,724	184	2,760	2,613	11,115	211,461
1982	173,472	44,844	215	3,760	2,726	13,255	238,272
1983	162,837	17,134	90	4,092	5,374	15,532	205,059
1984	185,134	31,321	171	2,300	3,426	11,408	233,760
1985	165,845	39,562	600	3,600	3,186	15,794	228,587
1986	175,715	23,902	1,153	3,950	4,410	24,448	233,578
1987	177,457	18,357	2,644	4,150	3,625	16,329	222,562
1988	152,369	31,339	7,059	4,300	3,745	21,727	220,539
1989	207,679	38,623	20,652	4,150	5,247	21,023	297,374
1990	154,109	28,359	16,827	4,300	4,090	27,105	234,790
1991	194,018	40,899	15,047	4,256	4,764	23,441	282,425
1992	142,340	35,716	21,358	6,250	6,182	27,012	238,858
1993	161,686	33,944	25,297	3,279	7,813	21,353	253,372
1994	164,581	22,032	28,973	3,171	3,093	15,949	237,799
1995	56,857	18,076	22,531	2,475	3,503	13635	117,077
1996	21	28,894	670	3,382	1,250	13,345	47,562
1997	83,488	20,415	27,738	0	NA	14,610	146,251
1998	107,837	7,144	34,130	4,750	NA	20,622	174,483
1999	56,499	10,094	30,227	11,700	NA	27,399	135,919
2000	9,800	22,329	22,100	8,600	NA	23,476	86,305
2001	13,100	25,424	30,400	11,000	NA	23,508	103,432
2002	103,038	14,902	47,100	8,000	NA	14,125	187,165
2003	137,357	14,730	54,300	NA	5,711[2]	20,950	233,048
2004	167,508	16,187	74,000	NA	NA	20,548	278,243
2005	174,806	6,850	68,800	NA	NA	17,553	268,009
2006	151,485	12,561	64,500	NA	NA	17,262	245,808
2007	83,235	10,079	61,000	NA	NA	14,087	168,401
2008	52,147	5.938	43,500	11,970	NA	14,963	128,518

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. To make comparisons to previous years more meaningful, the same catch accounting period was applied for years prior to 1998.

[2] Estimate of lower Skeena River sport catch only.Note that Troll (Areas 1-5) and Tidal Sport (Areas 1, 2E, 2W) are the components of the NBC AABM fishery. Net catch excludes jacks and small red-fleshed Chinook.

Appendix A.3. Central British Columbia (CBC) Chinook catches.

Year	Central British Columbia					
	Troll [1]	Net	Tidal Sport	Freshwater Sport	First Nations	Total
1975	135,470	40,985	NA	NA	NA	176,455
1976	145,204	32,669	NA	NA	NA	177,873
1977	122,689	32,409	4,773	1,544	6,972	168,387
1978	91,025	35,708	5,694	1,770	7,944	142,141
1979	107,884	50,445	5,225	1,940	7,585	173,079
1980	95,377	27,715	4,802	988	6,240	135,122
1981	69,247	18,912	3,490	1,261	5,701	98,611
1982	69,748	32,419	5,419	1,293	9,112	117,991
1983	97,447	12,556	4,271	821	6,442	121,537
1984	78,120	4,630	4,354	1,332	9,736	98,172
1985	27,090	12,391	3,943	823	6,019	50,266
1986	54,407	23,032	4,566	1,245	6,353	89,603
1987	65,776	10,893	3,933	1,563	6,296	88,461
1988	36,125	12,886	3,596	1,496	6,000	60,103
1989	21,694	6,599	3,438	4,526	8,992	45,249
1990	29,882	18,630	4,053	5,626	9,811	68,002
1991	29,843	15,926	4,409	3,335	8,801	62,314
1992	47,868	18,337	4,891	3,204	8,533	82,833
1993	23,376	10,579	6,114	2,880	9,095	52,044
1994	18,976	14,424	4,303	973	5,383	44,059
1995	5,819	11,007	2,172	1,180	3,501	23,679
1996	0	6,829	2,936	3,986	6,922	20,673
1997	12,351	3,575	8,524	1,139	9,764	35,353
1998	2,198	5,355	5,514	779	6,671	20,517
1999	2,074	4,320	10,300	NA[2]	5,440	22,134
2000	0	3,210	7,400	NA[2]	4,576	15,186
2001	0	6,462	7,650	1,024	5,435	20,571
2002	481	4,676	7,330	723	3,292	16,502
2003	20	2,806	8,385	491	3,173	14,875
2004	0	6,324	10,677	524	4,003	21,528
2005	0	6,323	9,017	809	4,180	20,329
2006	0	5,231	9,400	NA	4,013	18,644
2007	0	5,542	6,130	522	2,102	14,296
2008	0	1,133	2,909	276	3,018	7,336

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. To make comparisons to previous years more meaningful, the same catch accounting period was applied for years prior to 1998.

[2] freshwater catch included with tidal catch

Net catch excludes jacks and small red-fleshed Chinook.

NA=not available

Appendix A.4. West Coast Vancouver Island (WCVI) Chinook catches.

Year	West Coast Vancouver Island						
			Tidal Sport	Tidal Sport			
	Troll [1]	Net	Inside [2]	Outside	Freshwater Sport	First Nations	Total
1975	546,214	19,233	NA	-	NA	NA	565,447
1976	665,010	17,492	NA	-	NA	NA	682,502
1977	545,742	13,745	NA	-	NA	NA	559,487
1978	568,705	25,143	NA	-	NA	NA	593,848
1979	477,222	35,623	7,964	-	NA	NA	520,809
1980	486,303	34,732	8,539	-	NA	NA	529,574
1981	423,266	36,411	11,230	-	NA	NA	470,907
1982	538,510	41,172	17,100	-	NA	NA	596,782
1983	395,636	37,535	28,000	-	NA	NA	461,171
1984	471,294	43,792	44,162	-	NA	NA	559,248
1985	345,937	11,089	21,587	-	NA	NA	378,613
1986	350,227	3,276	13,158	-	NA	NA	366,661
1987	378,931	478	38,283	-	NA	NA	417,692
1988	408,668	15,438	35,820	-	NA	NA	459,926
1989	203,751	40,321	55,239	-	NA	NA	299,311
1990	297,858	29,578	69,723	-	NA	1,199	398,358
1991	203,035	60,797	85,983	-	NA	41,322	391,137
1992	340,146	9,486	46,968	18,518	NA	8,315	423,433
1993	277,033	28,694	65,604	23,312	NA	5,078	399,721
1994	150,039	2,369	52,526	10,313	NA	1,515	216,762
1995	81,454	458	21,675	13,956	NA	5,868	123,411
1996	4	0	2,266	10,229	NA	4,308	16,807
1997	52,748	486	47,355	6,400	NA	1,199	108,188
1998	2,282	1,643	55,697	4,177	NA	1,600	65,399
1999	5,307	970	47,163	31,106	NA	11,458	96,004
2000	63,400	100	4,468	38,038	NA	2,396	108,402
2001	77,491	0	6,423	40,179	6,198	930	131,221
2002	132,921	456	36,140	32,115	77	10,893	212,602
2003	151,826	9,057	51,622	23,995	NA	10,082	246,582
2004	174,128	12,532	61,132	42,496	26	20,000	310,314
2005	148,798	23,599	41,710	53,928	6,225	35,000	309,260
2006	109,004	20,308	41,380	37,905	NA	28,628	237,225
2007	94,921	26,881	38,611	46,229	NA	20,098	226,740
2008	95,170	8,257	24,855	50,556	NA	12,159	190,997

Troll: Areas 21, 23-27, and 121-127; Net: Areas 21, and 23-27; Sport: Areas 23a, 23b, 24-27

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. The same catch accounting period was applied for years prior to 1998.

[2] Prior to 1992, catch was not reported as 'inside' or 'outside'. Therefore 'inside' catch for those years represents total tidal sport catch.

[3] Including 5,000 First Nations troll catch.

Appendix A.5. Johnstone Strait Chinook catches.

Year	Johnstone Strait					
	Troll [1] Area 12	Net	Tidal Sport	Freshwater Sport	First Nations	Total
1975	18,065	30,295	NA	NA	NA	48,360
1976	30,838	31,855	NA	NA	NA	62,693
1977	26,868	49,511	NA	NA	NA	76,379
1978	13,052	55,148	NA	NA	NA	68,200
1979	13,052	31,291	NA	NA	NA	44,343
1980	11,743	30,325	NA	NA	NA	42,068
1981	13,035	28,620	NA	NA	NA	41,655
1982	11,234	29,454	NA	NA	NA	40,688
1983	14,653	28,364	NA	NA	NA	43,017
1984	9,260	18,361	NA	NA	NA	27,621
1985	3,567	38,073	NA	NA	NA	41,640
1986	3,951	17,866	NA	NA	NA	21,817
1987	1,780	13,863	NA	NA	NA	15,643
1988	1,566	6,292	NA	NA	NA	7,858
1989	1,825	29,486	NA	NA	NA	31,311
1990	2,298	18,433	NA	NA	NA	20,731
1991	1,228	15,071	10,075	NA	1,287	27,661
1992	2,721	9,571	14,715	NA	29	27,036
1993	4,172	15,530	NA	NA	20	19,722
1994	2,231	8,991	NA	NA	0	11,222
1995	4	970	NA	NA	71	1,045
1996	0	447	NA	NA	107	554
1997	1,380	819	NA	NA	179	2,378
1998	990	60	2,366	NA	138	3,554
1999	89	156	7,813	NA	469	8,527
2000	197	220	5,719	NA	212	6,348
2001	500 [2]	200	3,759	NA	370	4,329
2002	100	600	2,331	NA	400	3,431
2003	710	299	7585	NA	130	8724
2004	630	220	12,837	NA	28	13,715
2005	2	291	12,009	NA	NA	12,302
2006	0	244	7,238	NA	200	7,682
2007	0	2	8,922	NA	200	9,124
2008	0	48	3730	NA	324	4,102

Troll: Area 12,Net: Areas 11-13

Sport: Based on July - August creel census in Area 12 and northern half of Area 13

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. The same catch accounting period was applied for years prior to 1998.

Appendix A.6. Strait of Georgia/Fraser Chinook catches.

Year	Strait of Georgia/Fraser					
	Troll [1]	Net	Tidal Sport	Freshwater Sport [2]	First Nations [3]	Total
1975	174,001	66,119	398,000	NA	20,170	658,290
1976	200,229	73,018	490,000	NA	19,189	782,436
1977	248,082	85,222	372,000	NA	23,310	728,614
1978	217,955	50,247	500,000	NA	19,541	787,743
1979	255,057	49,038	350,000	NA	14,931	669,026
1980	273,077	31,161	204,100	NA	15,252	523,590
1981	239,266	19,985	197,239	NA	11,987	468,477
1982	179,040	22,971	124,390	96	35,687	362,184
1983	105,133	17,520	198,433	NA	15,756	336,842
1984	90,280	19,851	369,445	7,880	22,784	510,240
1985	55,888	31,006	234,838	1,874	10,895	334,501
1986	44,043	32,359	181,896	1,573	15,646	275,517
1987	38,084	13,016	121,081	4,876	14,525	191,582
1988	20,224	8,373	119,117	7,546	15,589	170,849
1989	28,444	23,833	132,846	918	5,983	192,024
1990	34,304	15,298	111,914	2,341	17,948	181,805
1991	32,412	15,407	115,523	1,616	22,185	187,143
1992	37,250	9,159	116,581	1,677	20,038	184,705
1993	33,293	16,153	127,576	1,930	20,597	199,549
1994	12,916	14,078	70,839	2,475	22,476	122,784
1995	138	6,263	62,173	9,158	20,790	98,522
1996	2	9,591	89,589	6,749	17,781	123,712
1997	908	28,342	56,332	4,180	29,497	119,259
1998	105	6,779	20,923	22,709	18,926	69,442
1999	80	3,906	43,588	10,071	28,226	85,871
2000	270	5,584	32,750	2,078	26,213	66,895
2001	0	4,301	31,259	23,729	28,460	87,749
2002	506	8,980	52,979	21,400	27,774	111,639
2003	17	12,277	19,981	20,363	29,634	82,272
2004	17	12,318	13,475	16,885[4]	41,141	89,246
2005	0	5,296	11,972	21,831	26,919	66,018
2006	0	3,372	12,181	15,143	21,733	52,429
2007	0	2,714	14,561	14,315	21,317	52,907
2008	0	4,165	8,836	18,733	31,876	63,610

Troll: Areas 13-18 and 29; Net: Areas 14-19, 28 and 29; Sport: Areas 13-18, 19a, 28 and 29

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. The same catch accounting period was applied for years prior to 1998.

[2] Prior to 1990, catch includes catch from Fraser systems only; catch records not available those years from non-Fraser systems.

[3] No catch records are available for non-Fraser catch prior to 1990.

[4] Underestimate.

Appendix A.7. Canada - Strait of Juan de Fuca Chinook catches.

Year	Canada - Strait of Juan de Fuca				
	Net	Tidal Sport	Freshwater Sport [1]	First Nations	Total
1975	9,799	NA	NA	NA	9,799
1976	13,004	NA	NA	NA	13,004
1977	25,344	NA	NA	NA	25,344
1978	9,725	NA	NA	NA	9,725
1979	8,665	NA	NA	NA	8,665
1980	3,438	37,900	NA	NA	41,338
1981	9,982	29,832	NA	NA	39,814
1982	7,072	30,646	NA	NA	37,718
1983	328	30,228	NA	NA	30,556
1984	6,237	24,353	NA	NA	30,590
1985	17,164	27,843	NA	NA	45,007
1986	17,727	34,387	NA	NA	52,114
1987	6,782	24,878	NA	NA	31,660
1988	4,473	31,233	NA	NA	35,706
1989	21,238	32,539	NA	NA	53,777
1990	7,405	30,127	NA	42	37,574
1991	8,893	19,017	NA	250	28,160
1992	10,023	21,090	NA	302	31,415
1993	2,287	13,967	NA	317	16,571
1994	8,931	14,372	NA	600	23,903
1995	631	14,405	NA	751	15,787
1996	362	19,012	NA	20	19,394
1997	307	17,080	NA	42	17,429
1998	115	9,709	NA	1,500	11,324
1999	128	14,808	NA	52	14,988
2000	100	10,973	NA	272	11,345
2001	0	23,463	NA	135	23,598
2002	0	24,084	NA	NA	24,084
2003	292	26,630	NA	NA	26,922
2004	0	40,877	NA	NA	40.877
2005	153	30,480	NA	NA	30,633
2006	155	26,437	NA	NA	26,592
2007	138	26,549	NA	NA	26,687
2008	172	22,263	NA	NA	22,435

Net: Area 20

Sport: Areas 19b and 20

[1] While catch records are poor, in-river sport catch is believed to be small

NA=not available

Appendix A.8. Washington - Strait of Juan de Fuca Chinook catches.

Year	Washington - Strait of Juan de Fuca			
	Troll	Net	Sport	Total
1975	5,752	8,048	81,681	95,481
1976	10,488	6,072	75,308	91,868
1977	8,915	14,930	53,238	77,083
1978	10,006	11,224	62,299	83,529
1979	7,804	10,939	67,094	85,837
1980	10,682	11,320	56,415	78,417
1981	15,638	18,541	51,352	85,531
1982	19,024	22,547	29,842	71,413
1983	18,489	16,141	58,060	92,690
1984	15,650	12,120	48,003	75,773
1985	11,808	12,784	44,267	68,859
1986	30,000	17,000	69,000	116,000
1987	45,000	11,000	53,000	109,000
1988	49,000	10,000	39,000	98,000
1989	65,000	10,000	52,000	127,000
1990	47,162	5,294	50,903	103,359
1991	37,127	3,390	39,667	80,184
1992	31,452	927	38,438	70,817
1993	9,794	1,482	32,434	43,710
1994	3,346	5,864	1,661	10,871
1995	6,397	4,769	6,349	17,515
1996	9,757	604	4,825	15,186
1997	829	492	12,238	13,559
1998	338	265	2,159	2,762
1999	544	589	1,990	3,123
2000	332	640	1,670	2,642
2001	1,974	931	4,819	7,724
2002	1,783	1,076	2,028	4,887
2003	436	908	5,290	6,634
2004	20,627	592	4,519	25,738
2005	5,344	175	2,700	8,219
2006	1,115	957	5,695	7,767
2007	4,329	107	6,967	11,403
2008	1,816	4,579	NA	NA

Troll: Areas 5 and 6C; Area 4B from Jan. 1 - April 30 and Oct. 1 - Dec. 31
Net: Areas 4B, 5, and 6C
Sport: Areas 5 and 6, 4B Neah Bay "add-on" fishery

Appendix A.9. Washington - San Juan Chinook catches.

Year	Washington - San Juans			
	Troll	Net	Sport	Total
1975	3	90,100	31,988	122,091
1976	0	66,832	34,505	101,337
1977	62	84,316	14,049	98,427
1978	3	87,565	15,083	102,651
1979	5	53,750	17,367	71,122
1980	0	64,338	12,231	76,569
1981	4	50,695	9,727	60,426
1982	0	38,763	6,953	45,716
1983	2	28,497	15,166	43,665
1984	83	33,432	25,759	59,274
1985	872	33,579	12,610	47,061
1986	0	21,000	15,000	36,000
1987	0	29,000	14,000	43,000
1988	0	32,000	9,000	41,000
1989	1,000	16,000	9,000	26,000
1990	666	8,608	7,370	16,644
1991	135	11,753	5,115	17,003
1992	172	14,011	6,788	20,971
1993	243	14,002	6,916	21,161
1994	73	13,908	5,795	19,776
1995	9	5,333	7,863	13,205
1996	153	3,934	12,674	16,761
1997	29	29,593	9,155	38,777
1998	376	3,804	3,069	7,249
1999	114	3	3,421	3,538
2000	22	1,091	4,447	5,560
2001	0	970	6,522	7,492
2002	0	2,231	4,827	7,058
2003	0	4,827	3,008	7,835
2004	123	5,184	1,971	7,228
2005	0	4,358	2,703	7,061
2006	0	5,278	4,168	9,446
2007	0	2,621	5,524	8,145
2008	0	48	NA	NA

Troll: Areas 6, 6A, 7, and 7A
Net: Areas 6, 6A, 7 and 7A
Sport: Area 7
NA=not available

Appendix A.10. Washington – Other Puget Sound Chinook catches.

Year	Washington – Other Puget Sound		
	Net	Sport	Total
1975	131,982	173,086	305,068
1976	141,281	151,246	292,527
1977	145,470	97,761	243,231
1978	150,298	116,979	267,277
1979	128,073	156,402	284,475
1980	171,516	142,799	314,315
1981	145,152	106,048	251,200
1982	149,274	85,703	234,977
1983	134,492	123,752	258,244
1984	180,248	102,740	282,988
1985	184,907	92,603	277,510
1986	153,000	88,000	241,000
1987	127,000	59,000	186,000
1988	133,000	63,000	196,000
1989	156,000	75,000	231,000
1990	179,593	71,000	250,593
1991	89,495	48,859	138,354
1992	63,460	51,656	115,116
1993	54,968	41,034	96,002
1994	63,577	44,181	107,758
1995	63,593	61,509	125,102
1996	61,658	58,538	120,196
1997	47,522	43,961	91,483
1998	50,915	30,016	80,931
1999	91,947	34,116	126,063
2000	79,494	29,328	108,822
2001	123,266	40,170	163,436
2002	108,566	35,031	143,597
2003	86,206	32,210	118,416
2004	69,211	22,650	91,861
2005	82,629	30,760	108,638
2006	109,557	40,082	149,639
2007	118,628	57,468	176,096
2008	101,322	NA	NA

Net: Areas 6B, 6D, 7B, 7C, and 7E; Areas 8-13 (including all sub-areas); Areas 74C – 83F
Sport: Areas 8-13 and all Puget Sound Rivers
NA=not available

Appendix A.11. Washington – Inside Coastal Chinook catches.

Year	Washington – Inside Coastal		
	Net	Sport	Total
1975	34,859	1,716	36,575
1976	51,995	2,219	54,214
1977	72,467	2,043	74,510
1978	32,662	3,399	36,061
1979	36,501	2,199	38,700
1980	47,681	1,476	49,157
1981	36,880	786	37,666
1982	33,271	1,114	34,385
1983	16,210	1,452	17,662
1984	16,239	1,319	17,558
1985	25,162	1,955	27,117
1986	29,000	3,000	32,000
1987	51,000	3,000	54,000
1988	74,000	7,000	81,000
1989	85,000	6,000	91,000
1990	57,770	5,000	62,770
1991	54,397	6,070	60,467
1992	64,223	6,577	70,800
1993	59,285	9,180	68,465
1994	46,059	7,454	53,513
1995	46,490	9,881	56,371
1996	55,408	12,059	67,467
1997	28,269	6,619	34,888
1998	20,266	6,569	26,835
1999	11,400	3,165	13,565
2000	15,660	3,179	18,839
2001	19,480	8,645	28,125
2002	23,372	6,038	29,410
2003	18,443	6,075	24,518
2004	21,965	12,088	34,053
2005	20,668	7,051	27,719
2006	27,414	8,030	35,444
2007	12,353	5,066	17,419
2008	15,028	NA	NA

Net: Areas 2A - 2M; Areas 72B - 73H
Sport: All coastal rivers, Area 2.1, and Area 2.2 (when Area 2 is open)
NA=not available

Appendix A.12. Washington/Oregon North of Cape Falcon Chinook Catches.

Year	Washington/Oregon North of Cape Falcon			
	Troll	Net	Sport	Total
1975	268,971	1,212	265,785	535,968
1976	371,239	203	215,319	586,761
1977	244,491	4	197,563	442,058
1978	150,673	4	104,306	254,983
1979	133,035	3	84,977	218,015
1980	125,709	1,215	59,099	186,023
1981	109,519	209	96,151	205,879
1982	154,720	267	114,952	269,939
1983	63,584	62	51,789	115,435
1984	15,392	0	6,980	22,372
1985	55,408	493	30,189	86,090
1986	52,000	0	23,000	75,000
1987	81,000	4,000	44,000	129,000
1988	108,000	3,000	19,000	130,000
1989	74,600	1,000	20,900	96,500
1990	65,800	0	32,900	98,700
1991	51,600	0	13,300	64,900
1992	69,000	0	18,900	87,900
1993	55,900	0	13,600	69,500
1994	4,500	0	0	4,500
1995	9,500	0	600	10,100
1996	12,300	0	200	12,500
1997	20,500	0	4,100	24,600
1998	20,615	0	2,292	22,907
1999	44,923	0	10,821	55,744
2000	20,152	0	9,242	29,394
2001	54,163	0	25,592	79,755
2002	106,462	0	60,575	167,037
2003	101,758	0	36,513	138,271
2004	88,225	0	27,090	115,315
2005	87,126	0	40,004	127,130
2006	57,313	0	11,176	68,489
2007	38,742	0	9,535	48,277
2008	35,100	0	15,452	50,552

Troll: OR Area 2; WA Areas 1, 2, 3 and 4: Area 4B from May 1 through Sept. 30 (during PFMC management)
Net: WA Areas 1, 2, 3, 4, 4A
Sport: OR Area 2; WA Areas 1, 1.1, 1.2, 2, 3, 4 and 2.2 (when Area 2 is open)

Appendix A.13. Columbia River Chinook Catches.

Year	Columbia River[1]			
	Non-treaty net	Treaty Indian	Sport	Total
1975	323,000		34,870	357,870
1976	288,400		42,527	330,927
1977	255,600		58,838	314,438
1978	189,100		56,582	245,682
1979	169,691	7,865	38,700	216,256
1980	113,569	35,604	14,860	164,033
1981	35,881	54,190	20,882	110,953
1982	94,289	65,447	30,984	190,720
1983	32,877	32,490	22,709	88,076
1984	73,481	61,112	43,498	178,091
1985	74,982	78,959	45,204	199,145
1986	168,038	116,777	57,468	342,283
1987	340,931	152,325	105,603	598,860
1988	341,114	163,295	97,922	602,331
1989	146,739	142,765	88,136	377,640
1990	63,602	91,677	78,838	234,117
1991	53,935	58,855	78,953	191,743
1992	24,063	35,072	56,581	115,716
1993	19,929	40,318	62,326	122,572
1994	2,773	36,141	29,568	68,482
1995	777	42,804	36,551	80,132
1996	17,774	67,040	32,092	116,906
1997	11,268	73,569	46,138	130,975
1998	6,464	47,579	34,571	88,614
1999	10,115	80,368	45,499	135,982
2000	21,414	62,954	48,063	132,431
2001	42,137	167,113	137,444	346,694
2002	71,969	166,175	146,885	385,029
2003	77,458	149,204	143,009	369,671
2004	79,141	153,506	146,642	379,289
2005	45,681	128,897	87,411	261,989
2006	45,253	102,802	58,876	207,931
2007	26,755	56,358	47,385	130,498
2008	49,207	138,653	77,297	265,157

[1] The historical time series of catches in this year's report has changed from last year's report. Catches after 1980 have been broken out into non-Treaty net and Treaty Indian due to the inability to separate commercial vs. non-commercial. Catches from 1975-1980 are consistent for sport and total with the later times series.

Appendix A.14. Oregon Chinook Catches.

Year	Oregon		
	Troll	Sport	Total
1975	300	19,000	19,300
1976	1,000	21,000	22,000
1977	3,000	34,000	37,000
1978	1,000	37,000	38,000
1979	800	31,000	31,800
1980	300	22,000	22,300
1981	300	28,000	28,300
1982	500	23,000	23,500
1983	700	19,000	19,700
1984	1,088	27,000	28,088
1985	1,700	25,000	26,700
1986	1,900	33,000	34,900
1987	3,600	46,000	49,600
1988	4,800	49,000	53,800
1989	4,500	45,000	49,500
1990	0	38,000	38,000
1991	0	44,500	44,500
1992	384	39,000	39,384
1993	649	52,000	52,649
1994	371	33,590	33,961
1995	206	48,366	48,572
1996	989	56,202	57,191
1997	513	37,659	38,172
1998	858	37,990	38,848
1999	1,233	30,735	31,968
2000	1,860	33,262	35,122
2001	1,184	54,988	56,172
2002	1,633	61,085	62,718
2003	1,459	67,939	69,398
2004	2,258	71,726	73,984
2005	1,956	27,866	29,822
2006	1,884	39,357	41,241
2007	1,018	25,684	26,702
2008	208	NA	NA

Troll: Late season off Elk River mouth.
Sport: Estuary and inland.
NA = not available.

Appendix B. Escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2008.

Page

Appendix B.1. Southeast Alaska and Transboundary river escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks.

Southeast Alaska						
Year	Situk		King Salmon	Andrew	Blossom Index	Keta Index
	esc.	t. run	esc.	esc.	esc.	esc.
1975			62	520	146	203
1976	1,421	3,184	96	404	68	84
1977	1,732	2,981	199	456	112	230
1978	808	1,745	84	388	143	392
1979	1,284	3,089	113	327	54	426
1980	905	2,504	104	282	89	192
1981	702	1,857	139	536	159	329
1982	434	949	354	672	345	754
1983	592	1,290	245	366	589	822
1984	1,726	2,948	265	389	508	610
1985	1,521	2,916	175	640	709	624
1986	2,067	2,873	255	1,416	1,278	690
1987	1,379	2,874	196	1,576	1,349	768
1988	868	1,596	208	1,128	384	575
1989	637	1,377	240	1,060	344	1,155
1990	628	1,643	179	1,328	257	606
1991	889	2,095	134	800	239	272
1992	1,595	3,819	99	1,556	150	217
1993	952	2,558	259	2,120	303	362
1994	1,271	6,085	207	1,144	161	306
1995	4,330	14,987	144	686	217	175
1996	1,800	8,100	284	670	220	297
1997	1,878	6,601	357	586	132	246
1998	924	5,420	132	974	91	180
1999	1,461	7,208	300	1,210	212	276
2000	1,785	4,941	137	1,380	231	300
2001	656	2,317	147	2,108	204	343
2002	1,000	3,017	153	1,752	224	411
2003	2,117	6,280	117	1,190	203	322
2004	755	3,275	134	3,068	333	376
2005	613	1,171	141	2,030	445	497
2006	749		149	2,178	339	747
2007	677		179	1,780	135	311
2008	413		120	981	257	363
Goal Lower	500		120	650	250	250
Goal Upper	1,000		240	1,500	500	500

(continued)

Appendix B.1. (Page 2 of 2).

Transboundary Rivers						
Year	Alsek (Klukshu) Index esc.	Taku esc.	Stikine esc.	Unuk Index esc.	Chickamin Index esc.	Chilkat esc.
1975		12,920	7,571		370	
1976	1,064	24,582	5,723		157	
1977	2,698	29,496	11,445	974	363	
1978	2,530	17,124	6,835	1,106	308	
1979	3,104	21,617	12,610	576	239	
1980	2,487	39,239	30,573	1,016	445	
1981	1,963	49,559	36,057	731	384	
1982	1,969	23,847	40,488	1,351	571	
1983	2,237	9,795	6,424	1,125	599	
1984	1,572	20,778	13,995	1,837	1,102	
1985	1,283	35,916	16,037	1,184	956	
1986	2,607	38,110	14,889	2,126	1,745	
1987	2,491	28,935	24,632	1,973	975	
1988	1,994	44,524	37,554	1,746	786	
1989	2,202	40,329	24,282	1,149	934	
1990	1,698	52,143	22,619	591	564	
1991	2,223	51,645	23,206	655	487	5,897
1992	1,243	55,889	34,129	874	346	5,284
1993	3,221	66,125	58,962	1,068	389	4,472
1994	3,620	48,368	33,094	711	388	6,795
1995	5,397	33,805	16,784	722	356	3,790
1996	3,382	79,019	28,949	1,167	422	4,920
1997	2,829	114,938	26,996	636	272	8,100
1998	1,347	31,039	25,968	840	391	3,675
1999	2,166	16,786	19,947	680	492	2,271
2000	1,321	36,308	27,531	1,341	801	2,035
2001	1,738	46,664	63,523	2,019	1,010	4,517
2002	2,141	55,044	50,875	897	1,013	4,051
2003	1,661	36,435	46,824	1,121	964	5,657
2004	2,455	75,032	48,900	1,008	798	3,422
2005	1,034	38,408	40,501	929	924	3,366
2006	568	42,054	24,400	940	1,330	3,039
2007	677	17,516	16,038	720	893	1,378
2008	465	27,383	18,164	655	1111	3,233
Goal Lower	1,100	30,000	14,000	650	450	1,750
Goal Upper	2,300	55,000	28,000	1,400	900	3,500

Appendix B.2. Canadian escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks.

Year	Northern B.C.								
	Area 1 Yakoun esc.	Area 3[1] Nass Above GW[1]	Nass Total esc.	Nass t. run	Area 4 Skeena esc.	Skeena t. run	Area 8 Dean Index	Area 9 Rivers Inlet	Area 10 Smith Inlet
1975	1,500		14,895	17,874	20,319			3,280	960
1976	700		13,819	16,583	13,078			1,640	1,000
1977	800	13,688	14,288	18,410	29,018	39,606		2,225	1,050
1978	600	15,485	16,885	21,807	22,661	35,055	3,500	2,800	2,100
1979	400	11,253	12,783	16,229	18,488	28,166	4,000	2,150	500
1980	600	13,476	14,855	18,744	23,429	38,626	2,000	2,325	1,200
1981	750	12,625	13,925	17,606	24,523	42,018	3,500	3,175	1,020
1982	1,400	7,959	10,359	13,287	17,092	35,185		2,250	1,500
1983	600	13,252	16,301	20,516	23,562	39,510	500	3,320	1,050
1984	300	20,967	24,967	31,408	37,598	53,516	4,500	1,400	770
1985	1,500	17,782	19,694	24,768	53,599	76,544	4,000	3,371	230
1986	500	36,523	38,123	47,967	59,968	87,566	3,300	7,623	532
1987	2,000	19,540	20,986	26,568	59,120	76,349	1,144	5,239	1,050
1988	2,000	15,345	16,715	21,094	68,705	102,563	1,300	4,429	1,050
1989	2,800	28,133	29,175	36,594	57,202	83,439	2,300	3,265	225
1990	2,000	24,051	26,551	33,384	55,976	89,447	2,000	4,039	510
1991	1,900	6,907	8,259	13,136	52,753	79,343	2,400	6,635	500
1992	2,000	16,808	17,408	25,405	63,392	92,184	3,000	7,500	500
1993	1,000	24,814	26,508	36,678	66,977	96,018	700	10,000	500
1994	2,000	21,169	25,689	32,864	48,712	68,127	1,300	3,500	700
1995	1,500	7,844	8,776	16,187	34,390	48,351	1,100	3,196	400
1996	3,000	21,842	22,712	30,889	73,684	96,453	2,000	3,000	250
1997	2,500	18,702	20,584	27,658	42,539	65,350	1,400	4,980	100
1998	3,000	23,213	25,361	34,922	46,744	65,167	3,000	5,367	1,100
1999	3,200	11,544	13,118	22,310	43,775	70,993	1,800	2,739	500
2000	3,600	18,912	20,565	31,159	51,804	77,320	1,200	6,700	500
2001	3,500	29,687	31,915	44,595	81,504	112,346	3,795	5,062	300
2002	3,000	13,773	15,382	21,528	44,771	63,069	3,731	5,031	-[2]
2003	4,000	26,940	28,330	36,503	56,758	82,410	3,700	1,900	-[2]
2004	4,500	15,912	18,185	25,137	44,243	61,065	3,500	3,950	-[2]
2005	5,000	14,363	16,595	24,067	29,067	39,278	2,200	5,585	-[2]
2006	NA	24,725	27,743	37,098	33,094	43,689	3,700	3,930	-[2]
2007	NA	21,459	25,524	34,221	33,352	44,185	2,300	5,000	-[2]
2008	NA	17,862	20,198	26,202	32,963	54,279	1,100	5,792	-[2]

[1] GW refers to Gitwinksihlkw, the location of the lower fish wheels on the Nass River used to capture Chinook for the mark-recapture estimate

[2] The Docee River was dropped as an escapement indicator due to an inability to obtain reliable escapement estimates

Appendix B.2. (Page 2 of 2).

	Southern B.C.				Fraser River						
Year	W. Coast Vancouver Island esc.	Lower Strait of Georgia esc.	Lower Strait of Georgia t. run	Upper Strait of Georgia esc.	Fraser Spring Age 1.2 esc.	Fraser Spring Age 1.3 esc.	Fraser Summer Age 0.3 esc.	Fraser Summer Age 1.3 esc.	Fraser Spr/sum t. run	Harrison esc.	Harrison t. run
1975	800	5,475	6,390		7,179	8,184	26,875	16,875	119,081		
1976	1,075	4,340	5,390		4,600	10,307	4,925	13,630	98,691		
1977	1,835	6,530	7,590	3,880	3,675	13,261	19,600	17,240	132,553		
1978	2,750	6,495	7,035	6,150	4,305	15,725	16,700	19,200	109,119		
1979	2,048	10,686	11,209	4,127	2,770	14,985	18,275	10,205	101,252		
1980	5,974	8,819	10,519	1,367	6,255	16,521	8,350	13,625	71,504		
1981	5,050	6,007	7,607	1,945	2,975	12,274	13,120	12,202	62,668		
1982	6,812	6,186	6,657	3,260	5,510	15,010	6,850	15,088	85,140		
1983	2,700	6,582	6,862	3,770	2,641	24,225	9,500	16,604	72,526		
1984	3,862	8,456	8,861	4,600	6,380	30,370	15,522	13,595	95,681	120,837	131,740
1985	3,700	4,589	5,242	4,600	9,477	43,168	20,375	19,099	121,941	174,778	181,367
1986	2,760	3,105	3,776	1,630	10,275	48,446	22,460	32,505	144,617	162,596	177,662
1987	2,570	3,276	3,781	6,450	5,049	48,271	22,404	27,646	128,699	79,038	81,799
1988	4,560	7,957	8,638	3,300	4,003	41,783	29,567	32,066	129,587	35,116	38,285
1989	6,220	7,087	8,142	5,550	6,126	31,994	24,200	16,200	106,843	74,685	76,294
1990	3,660	7,023	7,627	2,320	3,225	41,560	25,425	33,747	135,124	177,375	180,837
1991	5,060	8,343	8,613	3,340	3,495	27,296	26,250	28,097	116,555	90,638	93,363
1992	4,830	11,377	11,637	5,268	5,937	33,038	32,200	38,011	130,249	130,411	132,042
1993	4,530	8,435	8,730	1,574	7,870	32,796	13,300	21,385	110,237	118,998	120,600
1994	4,080	7,479	7,824	1,237	10,696	51,655	25,350	23,657	145,303	98,334	100,839
1995	3,710	18,749	19,282	4,227	9,670	45,237	20,550	26,371	134,478	28,616	29,840
1996	6,026	16,465	17,275	3,600	20,726	38,398	50,900	43,142	185,559	37,394	38,568
1997	7,197	11,745	11,936	5,266	9,878	44,373	49,250	40,882	202,795	70,514	72,061
1998	11,643	7,658	8,731	10,350	3,003	37,862	68,033	36,750	169,333	188,425	189,103
1999	10,186	8,481	8,714	9,500	8,751	20,740	53,204	25,138	140,939	107,016	107,884
2000	4,675	8,084	8,223	12,850	11,731	26,773	45,161	25,869	155,209	77,035	78,098
2001	2,737	7,463	8,569	9,885	10,607	31,512	74,132	33,980	177,008	73,134	74,419
2002	4,036	5,862	7,812	12,865	16,423	42,408	85,132	34,886	221,020	89,968	91,122
2003	4,456	5,028	5,903	13,978	17,137	45,441	70,164	44,451	231,689	247,121	251,453
2004	8,491	3,271	3,641	13,365	12,156	31,614	53,764	30,980	194,440	128,990	138,890
2005	3,969	3,503	4,870	13,365	3,898	21,458	88,329	18,586	172,281	86,730	92,993
2006	4,568	3,910	4,880	961	6,642	21,699	149,928	20,565	242,878	50,942	52,798
2007	3,839	4,442	4,778	639	1,407	11,737	85,722	10,536	137,206	79,176	83,445
2008	3,342	4,686	4,926	520	6,121	17,181	106,539	15,431	187,591	41,603	43,798
Goal LL										75,100	
Goal UL										98,500	

Appendix B.3. Puget Sound escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks.

Year	Puget Sound													
	Skagit Spring		Skagit Sum/fall		Stillaguamish		Snohomish		Green		Nooksack Spring esc.		Lake Washington Fall	
	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	N. Fork	S. Fork	esc.	t. run
1975	627	627	11,320	24,625	1,198	1,635	4,485	6,123	3,394	6,238			656	881
1976	633	633	14,120	23,306	2,140	4,002	5,315	9,889	3,140	7,732			719	759
1977	520	520	9,218	17,994	1,475	2,549	5,565	9,618	3,804	5,366			675	728
1978	932	932	13,075	20,030	1,232	1,959	7,931	12,591	3,304	4,349			890	1,202
1979	818	818	13,306	21,443	1,042	2,366	5,903	12,706	9,704	10,730			1,289	1,430
1980	1,408	1,408	20,058	28,938	821	2,647	6460	16,688	7743	10,608			1360	1,431
1981	1,045	1,045	8,283	19,675	630	2,783	3368	8,968	3606	4,912			721	792
1982	753	753	9,910	20,722	773	3,058	4379	8,470	1840	3,850			885	1,148
1983	554	554	8,723	14,671	387	925	4549	10,386	3679	13,290			1332	2,124
1984	696	696	12,628	15,005	374	883	3762	8,480	3353	5,381	45	188	1252	3,436
1985	2,634	2,634	16,002	25,075	1,223	2,455	4,873	9,005	2,908	7,444	258	445	949	2,305
1986	1,922	1,922	17,908	21,585	1,277	2,416	4,534	8,267	4,792	5,784	226	170	1,470	2,419
1987	1,745	1,745	9,409	13,037	1,321	1,906	4,689	6,670	10,338	11,724	181	248	2,038	4,124
1988	1,743	1,743	11,468	14,647	726	1,185	4,513	7,389	7,994	9,207	456	233	792	2,373
1989	1,400	1,809	6,684	12,787	811	1,642	3,138	6,142	11,512	15,000	303	606	1,011	1,688
1990	1,511	1,546	16,792	19,172	842	1,739	4,209	8,345	7,035	15,200	10	142	787	1,128
1991	1,236	1,273	5,824	8,423	1,632	2,913	2,783	4,964	10,548	14,967	108	365	661	1,415
1992	986	1,010	7,348	9,201	780	1,247	2,708	4,319	5,267	9,941	498	103	790	1,349
1993	782	812	5,801	6,879	928	1,299	3,866	5,602	2,476	5,202	449	235	245	304
1994	470	496	5,656	6,586	954	1,285	3,626	4,885	4,078	7,963	45	118	888	891
1995	855	887	6,985	9,209	822	920	3,176	5,000	7,939	9,743	230	290	930	944
1996	1,051	1,078	10,706	12,286	1,244	1,244	4,851	7,921	6,026	8,668	534	203	336	341
1997	1,041	1,064	4,951	6,134	1,156	1,167	4,292	4,334	11,800	12,097	520	180	294	296
1998	1,086	1,091	14,700	14,976	1,540	1,558	6,304	6,344	9,115	10,627	368	157	697	697
1999	471	476	5,002	5,249	1,098	1,101	4,799	4,817	13,173	14,595	823	166	778	778
2000	1,021	1,025	17,024	17,206	1,647	1,647	6,092	8,400	10,526	16,222	1,245	284	347	347
2001	1,856	1,866	13,868	14,081	1,312	1,351	8,164	8,395	21,402	24,594	2,209	267	1,269	1,516
2002	1,076	1,092	19,671	19,887	1,636	1,641	7,220	7,245	14,857	16,460	3,741	289	637	647
2003	909	987	9,964	10,946	1,067	1,095	6,211	6,364	10,405	12,765	2,857	204	771	800
2004	1,622	1,622	23,750	24,241	1,506	1,531	10,606	10,780	13,991	20,631	1,746	130	730	773
2005	1,305	1,305	20,803	23,396	963	991	4,484	4,611	4,089	4,708	2,167	120	726	786
2006	1,896	1,919	20,819	21,196	1,254	1,268	8,308	8,402	10,157	14,141	1,184	355	1,219	1,245
2007	613	613	11,291	12,390	785	789	3,982	4,000	7,186	11,225	1,438	182	1,729	2,561
2008	1,472	1,472	11,351	14,470	1,800	1,801	8,373	8,378	5,971	10,109	1,266	318	758	1,334

Appendix B.4. Washington Coast escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks.

Year	Washington Coast																	
	Quillayute Summer		Quillayute Fall		Hoh Spr/Sum		Hoh Fall		Hoko Fall		Queets Spr/Sum		Queets Fall		Grays Harbor Spring		Grays Harbor Fall	
	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run
1976	1,300	1,700			600	1,300	2,500	3,100			505	737	1,200	2,500	600	1,000	10,313	1,836
1977	3,800	5,300			1,000	2,000	2,100	3,800			732	1,155	3,600	5,500	800	1,700	14,400	5,195
1978	2,300	2,700			1,400	2,472	1,900	2,900			1,110	1,406	2,200	3,100	1,000	1,600	8,372	4,555
1979	2,100	3,900			1,400	2,326	1,700	2,200			870	1,369	3,900	4,700	400	1,100	10,101	9,381
1980	964	1,500	6,700	7,600	800	1,079	2,200	2,800			1,038	1,213	3,200	5,800	200	600	21,639	11,656
1981	815	1,700	5,963	7,102	1,498	2,005	3,100	4,000			988	1,329	4,250	8,200	600	900	11,915	7,577
1982	1,126	2,700	7,107	9,651	1,553	2,125	4,500	5,800			781	1,244	4,150	6,600	610	669	13,296	5,606
1983	548	1,800	3,069	5,530	1,696	2,233	2,500	3,300			1,044	1,173	2,750	4,400	800	850	8,997	5,482
1984	618	1,000	9,128	10,447	1,430	2,005	1,900	2,600			958	1,189	4,350	6,300	1,128	1,130	22,616	21,058
1985	550	700	6,145	8,367	978	1,353	1,725	2,720			677	886	4,150	5,910	1,157	1,159	15,153	9,537
1986	853	1,000	10,006	13,380	1,248	1,912	4,981	6,000	801	839	925	1,193	7,894	9,180	1,795	1,826	21,568	13,988
1987	666	1,600	12,352	20,349	1,710	2,480	4,006	6,147	581	606	598	1,543	6,557	10,638	841	1,071	31,084	19,175
1988	2,599	3,943	15,168	22,115	2,605	3,708	4,128	6,873	784	821	1,765	2,267	9,494	12,505	3,106	3,208	36,725	27,216
1989	2,407	3,472	9,951	17,260	4,697	6,820	5,148	8,682	845	862	2,568	3,954	9,324	12,213	2,068	2,393	52,739	25,599
1990	1,483	1,840	13,711	16,914	3,886	5,294	4,236	6,327	493	498	1,780	2,480	10,569	13,155	1,567	1,630	36,802	16,580
1991	1,188	1,500	6,292	7,631	1,078	1,693	1,420	2,628	1,008	1,024	630	761	4,795	6,593	1,289	1,489	29,083	13,432
1992	1,009	1,271	6,342	7,750	1,018	1,443	4,003	5,139	741	750	375	505	4,911	6,880	1,813	1,851	24,113	13,175
1993	1,292	1,531	5,254	5,735	1,411	2,065	2,280	3,951	894	908	713	788	3,463	5,667	1,254	1,399	24,395	11,844
1994	974	1,187	4,932	5,692	1,699	2,372	3,967	4,322	429	440	705	727	4,233	6,854	1,403	1,479	23,961	11,817
1995	1,333	1,731	5,532	6,716	1,132	1,686	2,202	2,912	929	949	625	662	3,127	5,101	2,070	2,167	23,456	9,952
1996	1,170	1,388	7,316	9,293	1,371	2,083	3,022	4,061	1,256	1,258	776	891	4,218	5,927	4,462	4,745	26,461	16,988
1997	890	1,177	5,405	6,047	1,826	2,582	1,773	3,034	868	888	540	693	2,872	4,945	4,460	4,844	26,881	16,342
1998	1,599	1,829	6,752	7,940	1,287	1,880	4,257	5,388	1,702	1,702	492	537	3,859	5,173	2,388	2,679	17,257	11,476
1999	713	818	3,334	4,758	928	1,081	1,924	2,941	1,550	1,550	373	426	1,918	3,105	1,285	1,551	10,801	9,196
2000	989	1,149	3,730	4,794	492	529	1,749	2,632	730	730	248	250	3,755	4,147	3,135	3,417	12,998	8,088
2001	1,225	1,399	5,136	7,545	1,159	1,231	2,560	4,116	838	838	548	565	2,872	4,808	2,860	3,326	16,952	8,340
2002	1,002	1,100	6,067	9,512	2,464	3,375	4,415	5,716	680	680	738	755	2,419	5,562	2,598	3,217	13,509	10,126
2003	1,219	1,308	7,398	9,469	1,228	1,646	1,649	2,319	1,098	1,098	189	195	4,886	6,618	1,904	2,103	19,404	17,808
2004	1,093	1,159	3,831	6,133	1,786	2,239	3,211	4,410	1,088	1,088	604	619	4,978	6,802	5,034	5,330	35,461	27,853
2005	876	1,033	6,406	8,319	1,193	1,389	4,180	5,316	955	955	298	306	4,401	6,736	2,129	2,682	19,561	17,040
2006	553	604	5,642	7,656	904	1,061	1,532	2,088	880	880	330	336	2,931	4,259	2,481	2,863	20,310	15,955
2007	502	568	3,066	4,137	810	1,034	1,556	2,427	568	568	352	358	768	1,607	666	1,069	16,566	12,105
2008	904	1,036	4,306	5,727	550	582	1,774	2,408	483	483	305	305	3,082	4,104	996	1,281	13,012	19,511
Goal			3,000		900		1,200				700		2,500					

Appendix B.5. Columbia River escapements and terminal runs of PSC CTC wild Chinook escapement indicator stocks.

Year	Columbia Upriver Spring		Columbia Upriver Summers /1						Columbia Upriver Fall Chinook						
			Mid-Columbia		Snake River		Total		Lewis River /2		Deschutes River /3			Brights /4	
	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	esc.	t. run	esc.	t. run
1975									13,859	13,859	Mark	Above Falls		29,600	164,509
1976									3,371	3,371	Recapture	Expanded		27,700	109,726
1977									6,930	6,930		7,484	9,345	35,600	85,755
1978									5,363	5,363		5,049	7,020	25,800	78,280
1979	31,381	32,636	16,355	17,238	2,714	4,119	19,069	21,356	8,023	8,023		4,091	5,683	28,700	83,517
1980	32,983	34,090	16,583	17,494	2,688	2,919	19,271	20,413	16,394	16,856		3,159	5,110	27,700	71,690
1981	34,858	36,748	11,821	12,735	3,306	4,474	15,127	17,209	19,297	20,298		4,085	5,922	18,114	60,678
1982	39,756	42,759	8,269	9,150	4,210	4,745	12,479	13,894	8,370	10,126		7,406	9,422	27,226	69,578
1983	31,706	33,115	7,706	7,934	3,895	4,576	11,601	12,510	13,540	14,489		4,681	6,177	42,681	79,923
1984	25,213	27,084	12,369	12,689	5,429	5,079	17,798	17,768	7,132	8,128		4,404	5,374	45,452	126,026
1985	32,263	33,450	12,276	13,257	5,062	3,885	17,338	17,142	7,491	8,241		3,785	4,592	72,758	191,808
1986	40,573	43,137	10,640	11,361	6,154	5,824	16,794	17,185	11,983	13,504		5,355	6,508	90,961	275,061
1987	35,005	37,313	13,769	14,931	5,891	7,519	19,660	22,450	12,935	14,173		6,776	8,833	121,171	411,823
1988	32,389	34,869	12,527	13,442	6,145	8,304	18,672	21,747	12,059	13,636		5,982	8,373	97,781	331,542
1989	32,517	35,230	17,071	17,179	3,169	3,397	20,240	20,577	21,199	22,813		4,777	6,507	83,100	254,795
1990	30,901	33,204	12,883	12,976	5,093	5,123	17,976	18,099	17,506	18,784		2,224	3,194	48,891	150,399
1991	20,471	21,843	9,383	9,504	3,809	3,510	13,192	13,015	9,066	10,354		3,678	3,832	39,625	99,454
1992	33,887	36,105	6,133	6,200	3,014	3,125	9,147	9,325	6,307	7,129		2,777	2,814	38,879	78,202
1993	30,007	31,981	8,962	9,235	7,889	4,520	16,851	13,755	7,025	8,106		8,235	8,246	41,853	94,662
1994	9,168	9,659	11,771	11,970	795	907	12,566	12,877	9,939	10,541		5,455	5,524	66,470	127,315
1995	4,751	5,001	9,087	9,425	692	841	9,779	10,266	9,718	12,155		7,581	7,617	53,470	98,842
1996	19,387	20,466	7,597	7,880	2,607	2,832	10,204	10,712	13,971	13,971		8,759	8,837	51,973	134,356
1997	17,920	19,212	8,362	8,508	10,709	7,536	19,071	16,043	8,670	8,670		20,678	20,811	49,074	140,916
1998	17,452	18,393	9,525	9,757	4,355	4,739	13,880	14,496	5,929	5,929		10,923	11,428	40,012	130,874
1999	11,036	11,576	16,637	17,013	3,260	3,514	19,897	20,527	3,184	3,184		3,997	4,370	44,867	161,436
2000	51,751	55,119	16,889	17,080	3,933	4,017	20,822	21,097	9,820	9,820		3,230	3,637	62,675	152,107
2001	95,490	110,106	38,703	39,290	13,735	14,623	52,438	53,913	13,886	14,186	9,527	11,161	9,861	86,908	222,630
2002	76,541	85,976	67,671	71,601	22,159	20,104	89,830	91,705	16,380	18,230	11,133	12,252	12,103	116,237	265,166
2003	64,058	69,606	58,602	65,355	16,422	16,672	75,024	82,027	18,505	20,505	14,265	12,590	15,343	160,677	357,848
2004	58,773	64,455	44,573	53,718	8,813	10,206	53,386	63,924	15,342	17,133	10,197	11,879	11,421	150,440	356,437
2005	30,831	32,914	39,146	50,516	6,736	7,585	45,882	58,101	11,348	13,348	9,355	13,550	10,190	112,679	258,554
2006	35,142	37,649	38,154	60,422	7,058	12,173	45,212	72,595	10,522	11,999	14,196	13,374	14,964	76,898	215,424
2007	17,379	18,679	18,420	26,436	7,309	10,134	25,729	36,569	3,468	3,686	13,181	8,174	8,634	45,719	103,991
2008	34,253	39,616	20,786	28,702	22,612	23,111	43,398	51,813	5,200	5,200		6,980	7,395	76,599	189,900
Goal			17,857						5,700					40,000	

1/ Under the 2008 CRFMP, Upper Columbia Summer Chinook are managed for a combined hatchery and natural tributary spawning escapement of 20,000. Snake River spring/summer Chinook are managed separately. The Columbia River Summer model stock represents the summer Chinook above Priest Rapids. Based on a S-R analysis of model data, the interim goal for Mid-Columbia Summers is 17,857 until better data can be compiled.

2/ This is the number of naturally spawning adult fish in the Lewis River. The terminal run given is the escapement plus the Lewis River sport catch of wild adults.

3/ The first column is based on a mark-recapture project for the entire river. The second column is based on using the ratio of redds above and below Sherar's Falls. The agencies' management goal is 4000.

4/ The CRFMP stated an interim escapement goal of 40,000 natural spawning URBs at McNary Dam, including 30,700 for Hanford Reach and 1,100 Snake River. In 1990, the escapement goal was increased to 45,000 for increased hatchery programs. In 1994, a management goal of 46,000 was established, and in 1995, that management goal was retained while the escapement goal was reduced to 43,500. In 2002, the CRFMP escapement goal of 40,000 was agreed to by the CTC. Escapement numbers given are McNary adult dam count minus adult sport and broodstock above the dam. The terminal run is the Columbia River mouth terminal run of Upriver Brights minus the Deschutes River fall Chinook terminal run.

Appendix B.6. Oregon Coastal escapements as estimated via traditional habitat expansion methods and terminal runs of PSC Chinook Technical Committee wild Chinook salmon escapement indicator stocks.

Year	Oregon							
	Nehalem		Siletz		Siuslaw		Coquille	
	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run
1975	5,197	5,303	2,062	2,689	4,427	4,548	4,927	NA
1976	9,807	9,908	1,326	2,036	7,999	8,153	2,188	NA
1977	11,478	12,093	3,314	3,919	9,492	10,362	4,379	NA
1978	12,059	12,244	2,062	3,700	5,872	6,879	3,951	5,290
1979	12,205	12,469	7,217	8,907	8,040	8,799	4,030	4,715
1980	5,555	5,832	3,680	4,820	10,630	11,183	4,014	4,622
1981	10,752	10,939	4,435	6,751	8,724	9,342	4,313	4,996
1982	5,085	5,282	3,415	4,514	10,870	11,774	6,249	6,865
1983	4,431	4,525	2,136	3,152	4,186	4,885	3,193	3,807
1984	20,341	21,623	3,461	4,552	11,168	12,437	4,502	5,164
1985	18,670	19,473	6,628	7,685	14,822	15,805	3,157	3,853
1986	10,389	11,920	6,748	7,799	14,844	15,965	4,470	5,125
1987	13,560	15,725	4,577	6,023	17,603	19,411	5,640	6,997
1988	14,889	17,185	7,805	9,257	41,746	44,380	7,451	8,635
1989	10,389	12,000	4,401	5,980	28,279	31,690	6,462	7,820
1990	5,104	6,789	4,313	5,373	26,799	29,593	6,064	7,567
1991	5,557	7,685	5,633	6,926	26,100	29,825	9,074	11,470
1992	9,060	11,863	6,044	7,460	26,090	28,350	13,293	15,911
1993	5,345	9,317	4,342	6,506	10,446	14,012	6,993	10,419
1994	6,486	9,412	10,475	12,188	23,570	25,890	6,698	8,696
1995	5,194	8,845	5,164	8,045	26,715	31,194	7,885	10,374
1996	9,211	13,285	7,394	10,274	33,051	39,705	6,346	8,790
1997	10,026	13,069	3,726	6,165	22,305	27,516	6,743	8,338
1998	8,245	10,869	5,516	7,175	24,708	28,882	9,930	12,680
1999	8,063	10,632	4,166	6,232	23,963	27,271	8,513	10,950
2000	6,855	9,119	6,787	9,462	15,730	19,588	6,684	8,974
2001	11,662	15,998	10,563	14,704	38,717	43,836	8,233	12,007
2002	18,089	22,657	14,054	19,019	41,058	47,905	11,848	15,578
2003	10,906	15,095	11,149	15,693	57,795	65,044	16,482	21,572
2004	9,975	14,792	3,902	10,419	34,427	40,456	11,346	14,041
2005	7,038	8,459	6,426	8,727	16,619	18,303	5,029	5,767
2006	4,711	5,902	4,108	6,194	28,082	29,926	3,009	3,790
2007	4,304	5,759	528	1,536	6,764	9,665	2,098	3,557
2008	3,810	NA	1,202	NA	11,119	NA	4,562	NA
Goal	6,989		2,944		12,925		pending	

Appendix B.7. Oregon Coastal escapements and terminal runs as estimated by mark-recapture calibrated indexes of PSC Chinook Technical Committee wild Chinook salmon escapement indicator stocks.

	OREGON						
Year	Nehalem		Suislaw		Umpqua S. Fork	Coquille	
	esc.	t. run	esc.	t. run	esc.[1]	Esc.	t. run
1975	4,554	5,060	2,567	2,567	NA	6,668	NA
1976	9,345	9,446	4,565	4,565	NA	2,766	NA
1977	10,937	11,552	4,531	4,531	NA	5,676	NA
1978	11,491	11,676	2,867	3,874	400	5,618	6,957
1979	11,794	12,058	3,554	4,313	NA	5,203	5,888
1980	5,368	5,645	5,483	6,036	697	5,952	6,560
1981	10,390	10,577	3,767	4,385	890	6,405	7,088
1982	4,914	5,111	5,094	5,998	1,011	8,885	9,501
1983	4,282	4,376	923	1,622	1,628	4,686	5,300
1984	19,657	20,939	3,384	4,653	2,594	6,229	6,891
1985	18,042	18,845	6,845	7,828	2,246	4,498	5,194
1986	10,039	11,570	6,513	7,634	1,573	5,642	6,297
1987	13,103	15,268	5,568	7,376	2,795	6,429	7,786
1988	14,388	16,684	14,935	17,569	3,778	8,389	9,573
1989	10,039	11,650	12,856	16,267	6,162	6,948	8,306
1990	4,932	6,617	13,662	16,456	3,761	7,738	9,241
1991	5,370	7,498	15,709	19,434	6,717	10,508	12,904
1992	8,755	11,558	13,221	15,481	8,149	16,636	19,254
1993	5,165	9,137	2,960	6,526	3,364	7,446	10,872
1994	6,268	9,194	9,477	11,797	7,128	6,866	8,864
1995	5,020	8,671	10,246	14,725	11,388	12,060	14,549
1996	8,501	12,975	15,788	22,442	10,019	7,618	10,062
1997	9,089	12,732	8,313	13,524	7,286	8,580	10,175
1998	7,567	10,591	5,456	9,630	1,104	11,877	14,627
1999	7,792	10,361	11,785	15,093	1,804	10,653	13,090
2000	8,553	10,817	4,648	8,506	3,140	7,880	10,170
2001	9,557	14,293	16,814	21,933	6,510	12,512	16,286
2002	15,584	20,552	19,400	26,247	3,831	13,675	17,405
2003	19,280	23,569	24,596	31,845	8,918	18,876	23,966
2004	9,039	14,456	22,596	28,625	7,487	11,668	14,363
2005	6,801	8,222	14,884	13,800	3,084	5,438	6,176
2006	11,538	13,129	6,965	7,696	2,396	7,438	8,219
2007	5,393	6,648	1,491	4,154	2,457	2,098	4,037
2008	4,296	NA	2,617	NA	2,333	5,803	NA
Goal	pending		pending		pending	pending	

1/Preliminary analysis has shown that terminal catch of S. Fork Umpqua fall Chinook is unsubstantial